



American Forestry

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From Old Forests to New
Perpetuating Our Naval Stores
In the Beautiful Shoshone
Mount Mitchell
The Land Beyond Kona
A Buried Forest
The Australian Bush
The Falcon and the Jay

The American Forestry Association

Washington, D. C.

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IT IS A VOLUNTARY organization for the inculcation and spread of a forest policy on a scale adequate for our economic needs, and any person is eligible for membership.

IT IS INDEPENDENT, has no official connection with any Federal or State department or policy, and is devoted to a public service conducive to national prosperity.

IT ASSERTS THAT forestry means the propagation and care of forests for the production of timber as a crop; protection of watershed; utilization of non-agricultural soil; use of forests for public recreation.

IT DECLARES THAT FORESTRY is of immense importance to the people, that the census of 1913 shows our forests annually supply over two billion dollars' worth of products; employ

755,000 people; pay \$773,000,000 in wages; cover 470,000,000 acres not required for agriculture; regulate the distribution of water; prevent erosion of lands; and are essential to the beauty of the country and the health of the nation.

IT RECOGNIZES THAT forestry is an industry limited by economic conditions, that private owners should be aided and encouraged by investigations, demonstrations, and educational work, since they cannot be expected to practice forestry at a financial loss; that Federal and State governments should undertake scientific forestry upon National and State forest reserves for the benefit of the public.

IT WILL DEVOTE its influence and educational facilities to the development of public thought and knowledge along these practical lines.

It Will Support These Policies

National and State Forests under Federal and State Ownership, administration, and management respectively; adequate appropriations for their care and management; Federal co-operation with the State, especially in forest fire protection.

State activity by acquisition of forest lands; organization for fire protection; encouragement of forest planting by communal and private owners, non-political departmentally independent forest organization, with liberal appropriations for these purposes.

Forest Fire Protection by Federal, State, and fire protective agencies, and encouragement and extension individually and by co-operation; without adequate fire protection all other measures for forest crop production will fail.

Forest Planting by Federal and State governments and long-lived corporations and acquisition of waste lands for this purpose, and also planting by private owners, where profitable, and encouragement of natural regeneration.

Forest Taxation Reforms removing unjust burdens from owners of growing timber.

Closer Utilization in logging and manufacturing without loss to owners; aid to lumbermen in achieving this.

Cutting of Mature Timber where and as the domestic market demands it except on areas maintained for park or scenic purposes, and compensation of forest owners for loss suffered through protection of watersheds, or on behalf of any public interest.

Equal protection to the lumber industry and to public interests in legislation affecting private timberland operations, recognizing that lumbering is as legitimate and necessary as the forests themselves.

Classifications by experts of lands best suited for farming and those best suited for forestry; and liberal National and State appropriations for this work.

AMERICAN FORESTRY

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WASHINGTON, D. C.

OVID M. BUTLER, Editor
L. M. CROMELIN, Assistant Editor

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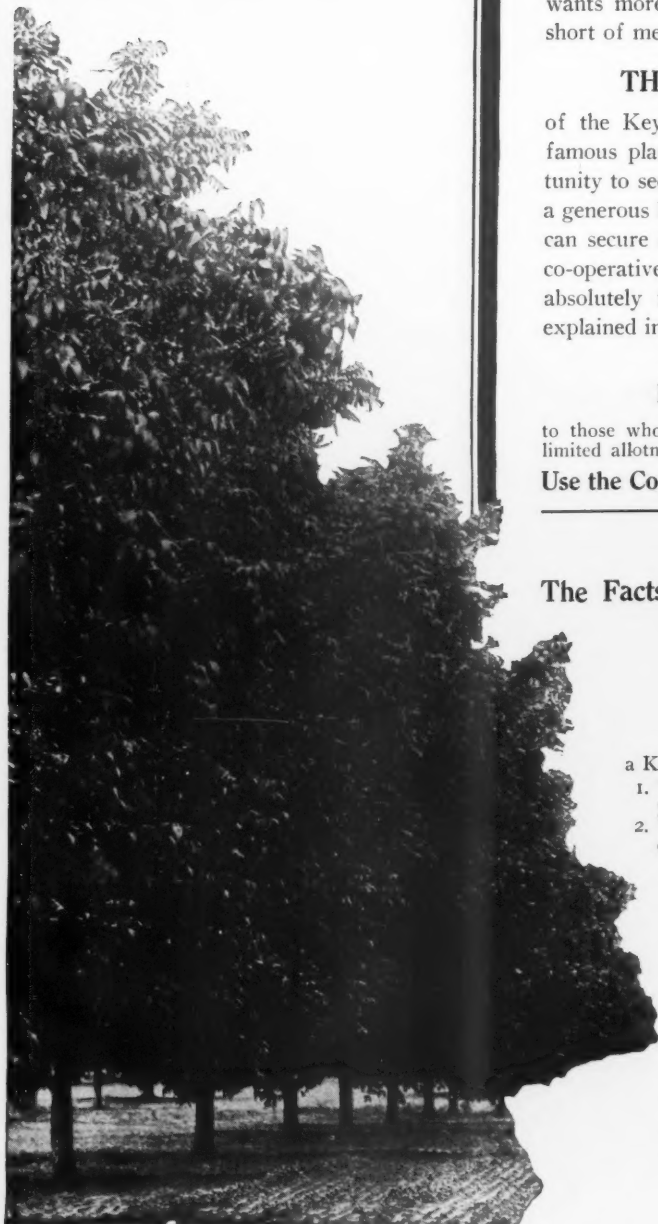
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AMERICAN FORESTRY

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America's Transition from Old Forests to New

By E. T. ALLEN

WHAT does the term "national forest policy" convey to you? When it heads an article, introduces a speaker, or denotes the object of legislation, does it connote anything sharp, real, interest-compelling; anything vital and unavoidable in the lives of American men and women?

Does it suggest woodland depths, tree-fringed sky-lines, glen and stream, forest excursions, or Christmas trees? If so, well. Well also if it suggests the scars of torch

and ax, idle lands, dwindling streams, and other national errors that call for redemption. But does it also bring up pictures of ships at sea, laden trains, busy mills, flashing axes, log-strewn rivers, marvelous machinery—all the kaleidoscopic scenes of perhaps the most picturesque and varied of all men's struggles to make earth yield him the means of life and comfort?

Does it mean more homely associations with the use of wood, without which you could not pass a day? The



(Copyright, Cress-Dale Photo Company, Seattle)

ONE OF THE MANY SCENES OF PERHAPS THE MOST PICTURESQUE AND DIVERSIFIED OF ALL MAN'S STRUGGLES TO MAKE EARTH YIELD HIM THE MEANS OF LIFE AND COMFORT. THE FOREST IS STILL THE FOSTER-MOTHER OF THOUSANDS OF WORKERS AND THEIR FAMILIES, WHOSE TOILING GAINS, REDISTRIBUTED THROUGH ALL THE ARTERIES OF COMMERCE, AT LAST IN SOME PART CONTRIBUTE TO OUR OWN LIVELIHOOD

building of homes and their furnishings? The fire that cooks and warms; the matches that light it? The paper you read, printed on wood pulp; the food you eat, crated in wooden boxes, transported in wooden vehicles, hauled over wooden ties, stored in wooden barns, grown in wooden-fenced fields? And, part of all this, the toil and lives of thousands of workers and their families, to whom the forest is still the foster-mother and whose little gains, redistributed through all the arteries of commerce, at last in some part contribute to your own livelihood?

THE PROMISE OF FOREST VOICES

Even if it does not, as it should, suggest any of these true and intimate pictures, yet some day, in some fashion, you shall hear forest voices as truly as though you were with Robin Hood and his merry men in the green aisles of Sherwood. Since the ash-tree Yggdrasil of Scandinavian mythology bound the world together with its roots; since the Tree of Knowledge fruited our destiny in Eden; since the earliest consciousness of a mankind which was evolved and nurtured in the forest and emerged thence to desert and plain with a mind forever grooved by forest loves and fears—even, perhaps, since some still earlier day, when our progenitors sheltered under the tree-ferns, all fresh from the ocean ooze—there has never been a time when the forest has not had mysterious appeals to the human heart.

Which is all by way of introducing the American forest problem. More than ever before, we are told, this problem threatens serious consequences unless a vigorous national policy is adopted; it is one of the most practical economics, and it is withal so full of race-old sentiment that even the forestry experts cannot agree when this is vice and when it is virtue. It cannot be intelligently discussed without an excursion into the past to learn the origin and importance of some of our forest impulses.

For there are relations of man to the natural conditions of his evolution which so tangle the strands of sentiment and practicality that the difficult weaving of these in acceptable pattern lends most of the interest to human history. When expediency and sentiment go hand in hand, progress in civilization is orderly and accepted as

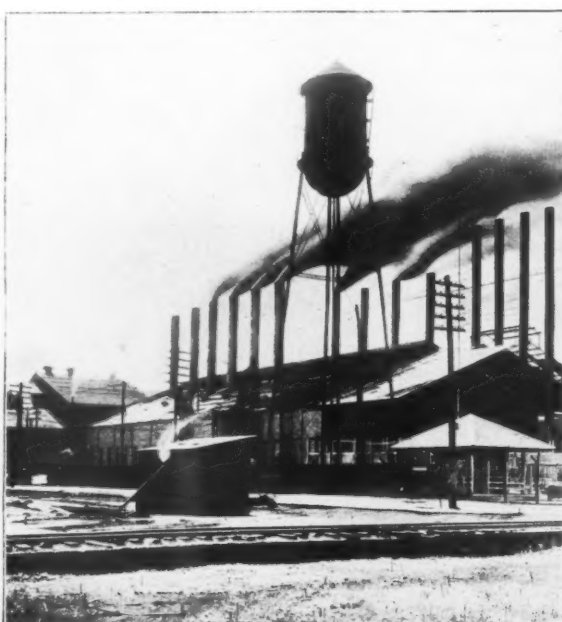
a matter of course. When they do not, we have epic struggles of war, religion, and social economy even slower to end than those caused by conflict of purely practical aims.

So it has always been with the forest, which man can neither preserve nor destroy without denying some deep need, material or spiritual. Even before universal dependence upon lumber added the greatest complication of all, the problem was acute. Kings and nobles reserved vast tracts for sport, and the people went hungry. The word forest itself originally carried no meaning of tree-growth, but applied to any game preserve, though it might be treeless, and the forester was merely a game-keeper.

MAN'S MATERIALISTIC ATTITUDE

In time the governing attitude became materialistic, for man learned that of all things wood best served his growing need for construction, not only of shelter, but of nearly every device and invention. His wood consumption reached a rate per capita which, though varying with its accessibility, was always so high as to make wood constitute the chief volume of all he handled, except food. Meanwhile food production called for the clearing of fertile woodlands, developing in a portion of the population a veritable antagonism to the forest as an enemy to be subdued. The forests fell before these demands, and when they were gone the nation bartered for the supply of countries that had more.

Then came a material, if not spiritual, awakening. Disturbed stream-flow and erosion impoverished the land. Wood shortage affected every activity, even the national defense. The first conservation laws of every country, including ours, have been to assure ship timber. Even in this age of invention, the armies in the World War found victory and defeat balancing with ability to get airplane spruce from the Pacific Northwest, while the noblest groves of England, France, and Germany were cut to meet incessant demand for lumber for trenches, roads, and like military uses. Here at home our entire lumber industry was mobilized to supply cantonments, ships, crates, rifle-stocks, and countless other wooden accessories of war.



(Courtesy U. S. Forest Service)

WHAT DOES THE PHRASE "NATIONAL FOREST POLICY" SUGGEST TO YOU? WOODLAND DEPTHS, TREE-FRINGED SKYLINES, GLEN AND STREAM, FOREST EXCURSIONS, OR CHRISTMAS TREES? IF SO, WELL. BUT DO NOT FORGET THE OTHER PICTURES—THE SCARS OF TORCH AND AX; IDLE LANDS; SHIPS AT SEA; FLASHING AXES; BUSY MILLS. BELCHING FORTH THE SMOKE OF INDUSTRY AND SCREAMING OUT THE TOIL OF A MILLION WAGE-EARNERS

But these modern illustrations take us ahead of our story, besides placing on forest disappearance a military aspect less important than the handicap to all the population at all times. As both became apparent, nations have moved toward some definite forest policy, beginning with conservation of remaining supply and progressing to its renewal. This period has always been one of alarm. Forests grow slowly. Far-seeing men have feared recovery would not bridge the gap between the old supply and the new; also it has been marked among northern peoples, but yesterday forest-dwellers, with a resurgence of forest sentiment anything but materialistic.

THE ALTAR OF DETHRONED SYLVAN GODS

Even while loth to make any sacrifices of civilization to the dethroned sylvan gods, they feel an irresistible call to preserve their last and still-loved sanctuaries; and the instinct of generations of forest wanderers and hunters, as it has led them nearly to exterminate fish and game, no less demands periodic retreats from civilization to the chase, to solitude and to unrestraint.

This hereditary sentiment is often blind and unreasonable, shifting blame and avoiding responsibility for forest destruction, emotionally censuring as greed and selfishness the utilitarian practices actually demanded in less exalted moments, and obstructing practical forestry steps suggested by the more comprehensive economic awakening. But, after all, it assures success. Peoples without it do not succeed, for good forest economy also demands sacrifices they will not make without something more impelling than the good of future generations. Asia Minor, Mediterranean Europe, China—these have destroyed their forests almost beyond redemption. But northern Europe has forestry.

And so with Americans, whose pioneering of the forest westward from Plymouth Rock and Jamestown but revived afresh the memories of a people with northern blood and northern traditions. The spirit of the chase survives in all men today, whether of northern or of tropical origin; but the love of the open fire, carried even to the building in our luxurious steam and electrically equipped homes of the primitive fireplace, dirty and impractical as a heating device, persists only with those whose ancestors for ages knew fire as the symbol of life itself in a northern clime. These were forest-dwellers. As from the Alps to the Arctic tree-line they evolved tribes and tribal customs, forest influences shaped every rite and law until, when the Christian faith supplanted their grim sacrifices, it too accepted the mistletoe, the Yulelog and the Christmas tree.

FORESTS WHICH MARKED A NATION'S DESTINY

To such a people was given again in the New World a forest which no less must mark their destiny. From the Gulf to the Barren Grounds, from the Yukon to the Rio Grande, it knows no international boundary in that in new, more countless ways it touches our daily life. To make it supply our wants and aspirations, employ our workers and contribute forever to our prosperity is an end we seek with common inheritance, common interest, and, it should be, with common viewpoint. And, while luckily we shall never divorce it from sentiment, it is eminently a practical end.

Man needs wood in a multitude of forms. To make the earth supply it, adding the labor and ingenuity required to make it available for his use, is an industry second to none in usefulness and honor. It is not greed that fells trees when men need boards more than when,



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EVER SINCE THOSE DAYS, DIMMED BY A REMOTE PAST, WHEN OUR PROGENITORS SHELTERED UNDER THE TREE-FERNS, ALL FRESH FROM THE OCEAN OOZE, THE FOREST HAS HAD A MYSTERIOUS APPEAL TO THE HUMAN HEART. HERE ONE LOOKS DOWN UPON COAST RANGES OF OREGON, WHERE OUR LAST GREAT UNTOUCHED FORESTS MARK THE SKY-LINE



THERE IS NO CHAPTER IN THE EPIC OF CIVILIZATION MORE ELOQUENT OF THE HARDIHOOD, COURAGE, AND INVENTIVENESS OF MAN THAN THE HISTORY OF THE LUMBERMAN'S CONTEST WITH NATURE. THE ABOVE PHOTOGRAPHS ILLUSTRATE FOUR STEPS IN AN ESPECIALLY HAZARDOUS FEATURE OF LUMBERING ON THE WEST COAST, WHERE MUCH LOGGING IS DONE BY THE USE OF SPAR-TREES AND HIGH LEAD CABLES. THE FIRST PICTURE SHOWS THE "HIGH CLIMBER," EQUIPPED WITH LINEMAN'S SPIKES, BELT, AND AX, CLIMBING THE TREE SELECTED FOR THE SPAR-TREE. IN THE SECOND, HE IS ALMOST 200 FEET ABOVE THE GROUND, CHOPPING OFF THE TOP OF THE TREE. THE THIRD SHOWS THIS TASK ABOUT COMPLETED, AND IN THE FOURTH IS THE SPAR-TREE WITH CABLES ATTACHED AND LOGGING IN PROGRESS

because men need food, hardy boatmen bring cod from the banks or pioneers subdue and plant the wilderness. There is no chapter in the epic of civilization more eloquent of the hardihood, courage, and inventiveness of man in serving his fellows than the history of the lumberman's contest with the elemental forces of nature. He toils in winter far from the shelters of civilization; forest fires threaten him in summer; he hazards life and

the fruits of his work on treacherous rivers. He must be the most fertile of engineers, building bridges, dams, and railroads as need arises and with few facilities, and developing the most powerful machinery to handle his heavy material. His whole life is one of overcoming tremendous odds—a life that forges steel, but breaks glass; a life that makes men. Probably no more than others does it make saints or altruists.

WHO WILL PAY FOR NEW FORESTS

Through this need and this service has evolved our greatest manufacturing industry, that must continue if we are to prosper. Besides furnishing what we must have, it employs more men than any other. Lumber is made by labor; its cost at the mill before transportation and distribution begin is mostly in pay-rolls, returning to the consumer everywhere, whatever his vocation. Communities, even States, depend upon this industry to support agriculture, commerce, and tax revenue. Yet we find it is being called upon to cut our forests perilously faster than they are being renewed, in the face of our neglect to make forestry economically feasible or, what is worse, to prevent forest fire from destroying the natural reproduction attainable without other effort on a large proportion of our deforested land. As the Forest Service of the United States incessantly emphasizes, the problem is not to restrict the use of the forests we have, but to grow new ones to replace them.

Were this an economic problem only, it would be difficult enough, as history proves, for somebody must pay the bills and new forests are never grown until these bills are equitably distributed. Nor does any country ever grow new forests by any magic of legislation or sentiment until it pays to do so, because old ones no longer furnish timber cheaper, competitively, than the cost of growing them. As long as we can get our lumber cheapest through exploitation and waste, that is the way we insist on hav-

ing it, and the lumberman who refuses to furnish it that way soon does not furnish us at all.

A QUESTION OF A THOUSAND IMPULSES

Yet, were it an economic problem only, it would not be as difficult as it is. Americans are no less competent than others to deal with such, or any less just. But, for

reasons already outlined, the forest is about the last thing we regard purely economically. A thousand impulses, frequently conflicting, confuse our attitude as individuals, as groups, and as influenced by propagandists. While we want lumber and forest industry, we want the primeval forest. We want unimpaired stream-flow; also range for sheep and cattle. So we fire the woods to grow grass. While we demand that police power shall protect our welfare, we are a free people and resent interference with our right to build campfires where we please; to toss away burning matches and tobacco, and to leave fire-traps when we log or clear our farms. We proclaim the urgency of reforestation, but insist that the land pay taxes which growing



"EVEN WHILE LOATH TO MAKE ANY SACRIFICES OF CIVILIZATION TO THE DE-THRONED SYLVAN GODS, MAN FEELS AN IRRESISTIBLE CALL TO PRESERVE THEIR LAST AND STILL-LOVED SANCTUARIES." AND HERE YOU BEHOLD A SANCTUARY WHERE THE SYLVAN GODS STILL DWELL IN THE VIRGIN FORESTS OF THE CASCADES

forests do not earn. And fundamentally we like trees. It seems criminal to cut them, since we like them so, and the man who does it must be morally deficient and deserving of penalty; but he must not pass this penalty on to the consumer of lumber. That innumerable more trees are destroyed every year by our own carelessness with

[Continued on Page 106]

Naval Stores: Treasures of the Living Pines

By ELOISE GERRY

BUT doesn't turpentineing kill the trees?" asked the northern motorist, who was stopping over night in a hotel near the Georgia-Florida line on his way South for the winter.

"If turpentineing is well managed, the trees need not be injured unduly," replied the Southern business man with whom he was smoking in the hotel lobby. "The operator gains a good return on his investment over and above the value of the trees for lumber. Some trees, in fact, are more valuable for turpentine production than for lumber," he added.

part of the turpentine was lost by evaporation, too, after the first year's working, because there was no cup which could be moved up to catch the fresh gum."

"They call it 'bleeding' the trees, don't they?" said the Northerner. "I suppose it's just like tapping maples for maple syrup, as we used to do when I was a boy, in Vermont?"

"Well, no; not exactly that," said the Southerner. "Maple sap is mostly water which contains food materials, whereas pine gum is not the sap of the tree, but an extra secretion, which contains a considerable proportion



A TURPENTINE CAMP IN THE VIRGIN WOODS

The United States produces more naval stores than any other nation—more than 75 per cent of the world's supply, representing an invested capital of more than fifty million dollars. It is a picturesque industry, too, with a life and, practically, a language of its own.

"Maybe so, but I passed many trees that were practically girdled," insisted the Northerner. "These southern pineries look to me like an army of porcupines have been turned loose in them."

"Yes, there is much bad and wasteful work," regretfully admitted the Southerner. "Sometimes trees are killed, but in spite of the treatment they get the majority, especially the second-growth trees about here, yield remarkably and will continue to live and make some growth under unbelievable abuse. They will respond far better, however, when not so severely wounded. There has been a real improvement in methods during the last fifteen years, too," he hastened to state. "Few people nowadays cut 'boxes' or cavities in the wood at the butt of the tree to catch the gum. These boxes weakened the trees and increased danger from forest fires. A large

of oil. If you're interested," he continued hospitably, "I'll take you out to one of my turpentine camps near here tomorrow."

NOT A CASE OF FIDDLE BOWS AND BARN DANCES

The Northerner, who had to wait the next day for some repairs on his car, readily assented and even agreed to get up for an early breakfast. So, shortly after sunrise the next morning, the two men set out in a snorting, rattling, but very agile Ford.

"Tell me more about this industry," invited the visitor. "I never before thought much about where the painter got his turpentine. As for rosin, it calls to my mind only fiddle bows and barn dances. You say rosin is used for sizing paper, and that soapmakers are also large customers?"

"Yes, and I could weary you with a long list of other uses, including such things as lubricants, fillers, and medicinal products," replied the native. "This business of collecting and marketing gum from pines has been called the naval stores' industry since the days when its products, including pitch and tar, were used largely by sailing vessels. It is said to represent at present an invested capital of more than fifty million dollars in this country. The United States, you know, produces more naval stores than any other nation—more than 75 per cent of the world's supply. It is a picturesque industry, too, with a life and, one might almost say, a language of its own."

The town was soon left behind, and the road, in some places a mere track, wound through acres of young forest. The early sunshine, barred by the dark, straight boles of the trees, was reflected by the glistening, long, green pine needles lifted so radiantly against the clear blue sky. Quail rose from the wayside grass, plump and slow of flight. Melodiously from the distance sounded the weird yodel-like hallooming of a negro chipper, responsive to the exhilaration of the morning.

A HARVEST OF TEN THOUSAND FACES

"These are part of the twelve 'crops' we're operating here," said the Southerner. "Ten thousand 'faces' to a crop, you know. Most crops are for convenience divided again into smaller units, called 'drifts.' This is the first year these trees have been turpintined, or 'chipped'; 'virgin' work we call it. There are five crops of second year, or 'yearling,' work, and only two crops of third year, or 'buck,' at this camp."

"There is a chipper;" he pointed to a distant figure moving briskly from tree to tree, cutting with a peculiar chipping tool, or "hack," a fresh wound, or "streak," on each face. "One man can chip about 10,000 streaks, or a crop, each week.

Every few weeks the cups are 'dipped,' or emptied into barrels, and the collected gum, or 'dip,' is hauled to a central still."

"These woods don't look like many tracts that I saw yesterday, as I drove along," said the Northerner. "So often trees were dead or fallen and they seemed to be cupping very small trees, too."

"We used to turpentine without any particular care,



CONSERVATIVE METHOD OF TURPENTINING

This is the fourth year of a sustained yield on a turpentine operation on the Florida National Forest near Camp Pinchot. Note the carefully preserved strip of bark between faces, the yearly face being sixteen inches high. The upper left inset shows an unproductive or "dry" face—the tree abandoned, lost by carelessness—while the upper right inset shows wasteful methods, for in one year more than thirty-one inches of face was used, the bark bar between the faces being too narrow to insure the health of the tree.

but leases and labor were cheaper then, and timber was larger and more abundant. We found that it paid to use more time and care and to plan and regulate the methods used. One or two experiments made on our own land by Government investigators helped to show us where we were losing money and how we could improve practice. Such dollar and cents arguments are convincing.

TREES WITH APRONS AND LONG FACES

"We don't cup small trees, under ten inches in diameter now unless we wish to kill them out in order to thin a stand for future careful working. Usually we don't put two faces on trees under sixteen inches in diameter. You will notice also that there are carefully maintained strips of live bark, at least four to six inches wide, be-

tween faces on all two-cup trees. Our trees seldom blow down, because we do not chip deeply and we do not allow the tins called '*gutters*' or '*aprons*,' which lead to the cups, to be driven deeply into the tree, as many do, in such a way that the proper circulation of the sap is unnecessarily cut off and at the same time the tree is mechanically weakened. We also require the use of sharp tools and insist on smooth, regular work. Then, too, you will notice that the chipping mounts the tree slowly. Less than one-half inch of wood is cut away at the weekly chipping. A face goes up only about twelve to sixteen inches in height each year.

"By this conservative work we stimulate the tree and at the same time husband its productive power. In young timber, turpented for a number of years, con-



COLLECTING THE GUM OR DIP

The mounted woods-rider supervises the work on a number of crops. On this operation the most modern, conservative methods prevail. Every few weeks the cups are "dipped" or emptied into barrels and the collected gum or "dip" is hauled to the central still. Note the young pines coming in to take the place of the old trees.

siderable amounts of new tissue, especially adapted to produce extra quantities of gum, are formed. Nature builds a highly efficient factory, from which the wise operator can receive large returns. He must not, however, cripple his plant by cutting away heavy chips of wood at each chipping. Such practice, which has been far too common, removes the best of his working machinery. In effect, it causes his factory to shut down for extensive readjustments at a time when, properly managed, all his machinery could be working to its fullest capacity. To secure sustained yields, only enough wood should be cut away at each chipping to open the closed gum passages and remove the dead gum-producing cells at the surface of the wound. A very thin chip will accomplish this. Narrow chipping, moreover, lengthens the time that a face can be worked profitably."



THE "BLEEDING"

A close-up view of the wound or streak on a turpentine pine. Note the exuding droplets of gum. There are a number of annual growth rings exposed by the wound.

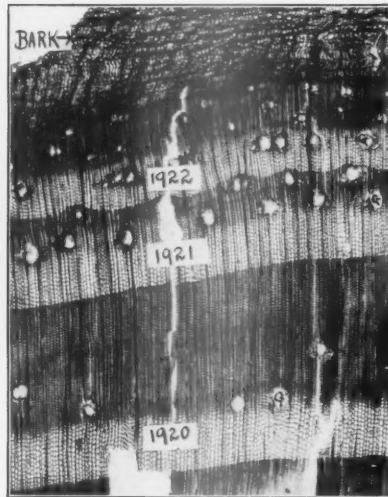
THE TURPENTINE CAMP

The two men now came in sight of the turpentine camp, and the Northerner viewed with interest the quarters of the manager, stiller, woodriders, and other hands. The car was stopped before the office and commissary. While the Southerner transacted his business, the visitor examined the stock on the rough wooden shelves and found a variety of merchandise rivaling even that ascribed to the country crossroads store of the North.

The Southerner led the way across the camp to the still, flanked by its storage tanks for turpentine, and its barrel-filled rosin yard. The intensely hot liquid amber of a freshly stillled charge of rosin, just drawn, was being strained through cotton batting, before it was run into

barrels. In the yard several hundred barrels of rosin were being graded. The stranger watched the inspector holding to the light his standard cubes of varying shades of amber, as he compared with them a cube of rosin cut from each barrel. The sing-song intonation of the markers fell upon his ears, as they repeated rosin grades

given, from W W, the whitest, to the dark lower grades, each nicknamed as "Frank" for "F" grade, "Nancy" for "N," and so on, to avoid confusion from similar letters. From the rosin yard his attention was drawn to the cooper shop by the syncopated drumming of the cooper beating rhythmically on the staves as he drove a hoop into place on a pine rosin barrel. Turning back



THE TREE'S RESIN FACTORY

A pine chip from the streak seen under the microscope. Gum exudes only from gum passages (G). The sap of the tree travels through the other cells and keeps the wood moist and healthy. Gum passages are more numerous in the 1922 and 1921 annual growth rings, formed after turpentine above the wound, than in 1920, before turpentine began. Many gum passages increase the yield.

to the still, the Southerner pointed out with some pride the thermometers installed, as a bit of improved practice, to help the stiller in the exercise of his judgment. "For



A TURPENTINE STILL

Flanked by its barrel-filled rosin yard, the air filled with the tang of the freshly stillled charge of rosin just drawn.



**CONSERVATIVE METHODS OF EXTRACTION INSURE MANY
SUCCESSIVE CROPS**

This clearly shows the splendid service of the trees in production. Where care is used, one face can be turpintined profitably for many years. During the tree's "rest period" rolls of healing tissue close over the scars of the first faces while they make ready to deliver their next rich crop of gum. The upper right insets show how such faces heal over, especially in young, vigorous trees.

generations," he said, "this judgment has been developed by the passing on, as well as might be, of the experience of the father to the son. In this country this trade is often practiced for years by certain families, many of them Scotch," he added.

The two men stood together watching the stiller as he listened to the sound of his boiling mixture of gum and water and tested the progress attained by the relative proportions of spirits of turpentine and water that were coming over. Various means of saving waste and producing a clean, high-grade product were also pointed out.

On the way to their car they stopped by a freshly chipped tree to watch the gum exuding from the surface of the streak. "Drop by drop it comes," said the Southerner, as they watched the transparent globules well forth, drip into the cup, or start their slow journey down the surface of the face. "Each drop is yielded at the price of just so much life energy of the tree. The least we can do is not to waste it." He straightened the cup on its *wooden peg* to prevent the chance of the gum overflowing. "No iron nails in this timber to wreck the saws later, you notice," he said.

JUST LIKE DIGGING TREASURE

They climbed into their car and drove away, dodging piccanninies, pigs, and chickens. On the way home the Southerner pointed out trees which had been turpintined for eight years, were healthy, and showed rolls of healing tissue closing over the scars of the first faces. "These trees will be rested a year or two, and then worked with another face or '*back-cup*,'" he said. "Using the trees to produce gum is just like digging so much treasure. If the tree is felled without using this resource, so much forest revenue is completely

wasted. Careful turpentineing of young second-growth trees may be combined successfully with grazing and with raising timber for pulp, railroad ties, or lumber. Slash pine, for instance, shows a remarkable natural reproduction. It grows so rapidly that at fifteen or twenty years of age it is usually large enough to be turpentineed with one face. Young longleaf will also make a good growth if hogs and fire do not interfere with its early development."

As they approached town, a logging train from a side camp halted their progress at a crossing. "There is the last chapter of my story," said the Southerner, as the little wood-burning engine puffed by, dragging two tank cars of turpentine bound for the automobile manufacturers. Several box cars filled with barrels of rosin next appeared round the wooded curve. "There," said the Southerner, "go the naval stores; they are the extra profits that we are winning by harvesting these forest products from



BARRELING THE FINISHED PRODUCT

At the left is shown the modern method of barreling the rosin after careful straining through cotton batting, while at the right is seen the old method of filling the barrels by dipping by hand.

"What small cattle," said the Northerner, as the Ford chased a thin, stiff-jointed, rough-coated heifer out of the road.

"Yes, those are 'piney-woods cows,'" was the reply. "It is in their behalf that thousands of young pines are destroyed by indiscriminate fires each year. The range is free and many people who have no interest in timber own cattle."

the living trees. Here come the cars of sawlogs. See the old turpentineed faces on the butts. In the pine country of the North and the West that is where the income from the timber begins; no revenue is received until after the tree is felled and dead. This condition may change in the West, but that is a chapter from another story."

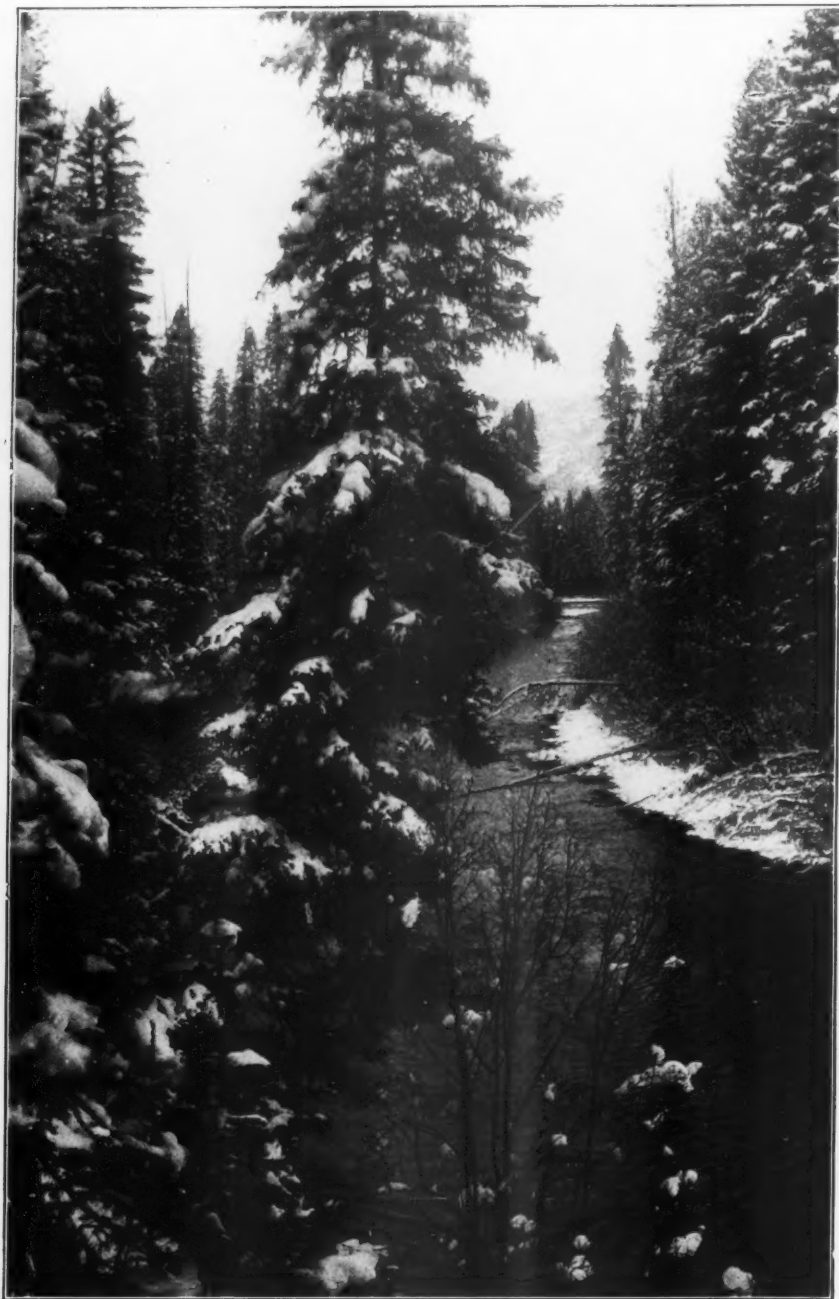
Beefsteaks and National Forests

It may seem like a cry from a juicy beefsteak or a tender lamb chop to the National Forests; but is it? The odds are just about 1 to 3 that the meat you eat comes from a steer or lamb ranged and fattened on one of Uncle Sam's great reservations, for more than one-half the sheep and nearly one-quarter of the cattle in the West graze each year on the National Forests, reports the United States Forest Service.

In California, 872,000 head of live stock, belonging to 3,370 owners, found forage during 1921 on the ranges of the 17 National Forests. This number represents 13 per cent of the beef-producing cattle and 22 per cent of the sheep in the State. In the last ten years the number of cattle and horses grazed on the California National Forests have increased over 27 per cent and the sheep over 45 per cent.

Kodaking in the Shoshone

By WILLIAM DORY



A forest scene in the high Shoshone Mountains, where the sturdy Engelmann Spruce hug the sparkling streams and warm the valleys when winter draws its mantle of snow over the Northern Rockies.

FROM the little town of Cody, Wyoming, we crossed a wind-swept desert, ascended beside a foaming stream a cañon—deep, desolate, and imposing—out past a great dam and reservoir into a wide expanse, and finally into a high valley, with tall rocks, like ruined cities, here and Gothic pinnacles there. Above these, against the sky, stretched long, level walls of rock into which tributary gorges had cut forms resembling age-old castles and forts.

Farther upstream the high country assumed a gentler aspect, becoming green with lodge-pole pines, Engelmann spruce, and other conifers. Such was the picture as we entered the precipitous Shoshone National Forest, covering more than 2,400 square miles of mountains in western Wyoming.

What an enchanting Forest it is! The sparkling Shoshone River and its tributaries run below steep slopes that grow steeper toward the sky until one wonders how tall trees can stand firm and straight where a man must use his hands as much as

One of Our National Forests in the Rockies Rich in Game and Natural Beauty

his feet to climb. The woods are interrupted at intervals by narrow paths, where avalanches of snow have cut clean and straight from rocky rim to floor.

Each great ravine in the hillside forest seems shut off from all the world, but gives the wanderer who has climbed to some convenient ledge a long mountainous perspective, beautiful and complete within its own walls. Above the rim spreads level forest on remnants of the table-land from which the valleys were eroded.

Native wild animals still roam this forest—deer, antelope, elk, moose, bear, panther (Rocky Mountain lion), wolf, coyote, wildcat, and of course the smaller animals. Elk are so numerous that the stranger may mistake the marks on the trunks of trees where the elk have rubbed the "velvet" off their horns for trail blazes, until he observes that these marks lead anywhere or nowhere.

The winters are long and cold. In former days, when their high pastures were buried in snow too deep for the strongest hoofs to dig through, the elk and



If you have ever been in a dense Lodge-pole Pine forest after a fresh fall of snow, this picture will bring back to you a pleasant sense of clear crisp air, the sharp ring of frost crackling in tree trunks and intervals of awe-inspiring stillness.

deer, as a matter of course, came down to the sheltered lower valleys and to the plains. Now the plains are occupied by their worst enemies, mankind, and each year sees their feeding grounds more and more encroached upon by cattlemen, bringing starvation to many of them.

Of late, in the government's great game refuge, Yellowstone Park, which adjoins the Shoshone Forest, the government has had to provide emergency feeding in unusually severe winters to keep the elk alive. If, driven by hunger, they wander beyond government protection, hunters await them. Montana relaxed her game laws lately, and thousands of elk were slaughtered helpless in the snow, a senseless waste. When we were in Shoshone Forest one elk and one deer to each hunter was the legal limit, but for bear, wolf, and other predatory animals there was no protection from gun or trap. Trapping is a cruel business, for the suffering bear may drag a heavy log, by a skewer through its leg, for a week before it is found and shot.



When the first fall of October snow whitens the land, the tents of hunters appear with unexpected frequency under the shelter of friendly branches, for the Shoshone Forest is a country where elk, moose, deer, antelope, and bear still roam.



Late sunset from the heights on Shoshone Forest—all dark except sky and far-off mountain tops—the more distant trees dark ghosts, black against black on the still mountain.

Man is a hunting animal, and so, it would appear, is woman, even eager to kill a magnificent big elk in order to hang two of its teeth on her watch chain. "You are as ruthless as a cat in pursuit of a bird," said an observer. "Well," replied Diana, "in that case my sympathy is with the cat, who wants a delicate morsel for breakfast." Then she added, "I was brought up to hunt; my brothers were proud of my skill, but my husband does not quite like me for a rival, although he is an excellent shot himself."

Many persons are now finding more thrill in hunting with a camera than with a gun. Certainly all the patience is needed of which the gunner boasts. And what if the photographer should fail to secure any picture; so does the gunner often return from the hunt disappointed. In the Shoshone Forest in the evening, before a blazing fire of big logs, where people grumbled because not allowed to cut down trees indiscriminately, it was amusing to hear hunters complain bitterly that the animals fled straight to Yellowstone Park, where they knew, although there is no visible boundary line, they could not be followed.

I spent many delightful days on horseback and on foot in valleys and uplands, where I met no man, hunting with a camera. I saw the fresh prints of elk where they had lain in the grass. I lingered by breaks in the rim rocks where they pass up and down, and once my horse wheeled round, startled by a bull elk in front of him. I turned the horse forward again and the elk, head and horns proudly high, stood in the sun watching me. I aimed the camera and pulled the trigger before he trotted away, and then alas! discovered that my film-pack had dropped out. I followed elk tracks in mud after rains, and in the autumn snow, and saw

Where the sparkling Shoshone River runs between steep cliffs and makes a land of canons, desolate but imposing.



Farther upstream, the high country assumes a gentler aspect and becomes green with spruce, pine, and other conifers.

these animals themselves occasionally, but always too far away or too late in the evening. So, missing the coveted prize, there is still keen enjoyment in the alluring hope of it and in the clean mountain air and the wild seclusion of surrounding steeps.

As for scenery, the camera has not soul enough to portray the effects of mountain lights that go most to the heart of the observer. The heavenly beauty of bright sunshine through a snow shower falling from a cloud above a mountain while the air is clear in the forest below becomes a dim picture in the camera. A golden sunset sky behind snowy tops, the lower mountains



Hunting with a camera in country like this is often more thrilling than hunting with a gun—and it requires just as much patience, but the author found that the camera has not soul enough to portray the Shoshones in all their glory.

in dark ranks of evening above the descending black forest—such visions lead a photographer again and again to attempt the impossible.

The magazines concerning outdoor life give pictures of a man holding up a string of fish or standing, gun in hand, with foot upon the body of a slain animal. Frederic Remington, once cowboy, famous painter of Western scenes, remarked: "As for the slaughtered carcass, I would feel if I were he, the kodak after the Winchester adds insult to injury."



A golden sunset sky behind snowy tops, the lower mountains in dark ranks of evening above the descending black forest.



Each great ravine seems cut off from all the world, but when the wanderer climbs to some convenient ledge, there unfolds a long mountainous perspective, beautiful and complete, within its walls.

Annual Meeting of the American Forestry Association

Joint Luncheon with New York State Forestry Association Proves
Highly Interesting and Successful

THE annual meeting of the American Forestry Association was held at the Hotel Commodore, New York City, on January 17. The principal event of the day was a luncheon participated in by the American Forestry Association. Col. Henry S. Graves, the new president of the association, presided and made a stirring address in which he called upon every citizen interested in making our forests and their products render a better service in our national development to join actively in the work of the American Forestry Association.

Other speakers were Alexander MacDonald, Conservation Commissioner, of New York; Augustus S. Houghton, Chairman, Conservation Committee, Adirondack Mountain Club; Geo. W. Sisson, of the American Paper & Pulp Association; Mrs. Richard M. Chapman, President, New York City Federation of Women's Clubs, and Mrs. William White Niles, Commissioner for Girl Scouts of the Bronx.

During the course of the luncheon, Col. Wm. B. Greeley, Chairman of the Elections Committee, announced the results of the recent election of new officers of the American Forestry Association, as follows: President, Col. Henry S. Graves; Vice-Presidents; Dr. Henry S. Drinker, Filibert Roth, M. D. Alexander, Harvey N. Shepard, John W. Blodgett, John W. Weeks, D. L. Goodwillie, W. D. Tyler, Richard F. Burges, Mrs. T. G. Winter, Hermann von Schrenk, Bonnell H. Stone, Thomas H. Owen, Lou D. Sweet, Mrs. Warren G. Harding, Geo. M. Cornwall, Bolling Arthur Johnson, B. H. Snell, William Kent, A. W. Laird; Treasurer, Robert V. Fleming.

Directors to serve one year: Joseph H. Pratt, of North Carolina, and W. A. Babbitt, of Indiana. Directors to serve five years: George D. Pratt, of New York; George S. Long, of Washington, and Henry C. Campbell, of Wisconsin. Mr. Campbell's death, two weeks ago, however, created a vacancy in his position which was filled by the board by the appointment of William P. Wharton, of Massachusetts. The directorship made vacant by the election of Col. Graves as President of the Association was filled by the appointment of J. R. Swift, of Pennsylvania. The permanent appointment of Ovid M. Butler as Executive Secretary and Editor of American Forestry and the selection of Cecil V. Maudlin as Business Manager was approved by the board.

The New York meeting was one of the best attended which the association has held in recent years. In opening his address, Col. Graves called attention to the fact that the American Forestry Association is the oldest forest agency in the country, having been organized and in existence for more than forty years. To it he attributed a setting in motion of the forest movement in the United States, and he declared that the largest opportunity which has confronted the association during its forty-five years of activities is now at hand.

"We are entering a new era in the development, use, and conservation of our forests," he declared. "The country is facing new problems in regard to the supplies of forest products and in securing a service from forests in local industrial development. Of great significance is the fact that this is now being realized by the country, and

by the industries engaged in the production of lumber and in the manufacture of its products."

Col. Graves declared that he accepted the position of President of the Association because he believed it to be the national organization which can most effectively carry forward the forest movement.

Mr. MacDonald, who followed Col. Graves, told of the need of forest regrowth in New York, and described in an interesting manner what is being accomplished by that State. "In common with other States," he said, "New York is faced with the problem of replacing its forests. It is not a case of saving them. The time for that has gone by. We can make more intelligent use of what we have left but we must do more than that. To meet the situation adequately is going to require the intelligent co-operation of business men, farmers, municipalities, and the State government. We are cutting from our forests 350,000,000 feet annually and according to the best estimates obtainable, we are growing only 70,000,000 feet."

The speaker said he believed that New York laid the foundation for forest replacement when it inaugurated the policy of establishing State Forests, of developing a forest fire protective system and of starting forest nurseries to supply trees for planting up State lands. New York, he said, claims the largest forest nursery in the world, that at Saratoga Springs, which has a capacity of 25,000,000 trees.

Augustus S. Houghton spoke on the value of the American Forestry Association to public welfare. "Organizations such as this one, with its own publication," he said, "have an opportunity denied to others that do not have a magazine as their spokesman. The value of this organization, therefore, is dependent upon the wise use of its resources. That again is conservation. If the association is to be of value to the country it must be used, not for the benefit of private or selfish interests, but for the benefit of the public. It can do this. The association is beginning a new year. It has everything in its favor, a new president, some new directors, and a new editor for its magazine.

"In its foreword for the January issue is a promise of great things. Truly the association has a mission, tempered leadership, bringing into accord the various kindred associations so that there may be unity of action with the least amount of wasted effort and properly directing public sentiment. The magazine can and should become an instrument for the education of the people on the vital necessity of forest production and forest conservation.

"The last two issues of *American Forestry* give great promise for the accomplishment of this mission."

Mrs. Chapman, President of the New York City Federation of New York Women's Clubs, spoke briefly of the interest which the women of the United States have in the conservation of natural resources and of the influence which they can wield in bringing about legislation of the character needed. Mrs. William White Niles made a plea for the starting of forest education with the child, declaring it her belief that the most effective and lasting education in the conservation of America's forests is that which begins with the boys and girls.

A Message From Our New President

THE task of the American Forestry Association is to carry forward the movement of forestry to definite practical achievement. Its mission is to stop the devastating forest fires, to get forestry into actual practice, to restore what has been destroyed, to bring about a more economical use of forest products, and make the forest of greater service in recreation and as the home of wild life. This mission can be accomplished only by the concerted action of all of the interests of the country that are concerned directly or indirectly with the right use and development of our forests and their products.

The agency to organize these interests, to take the leadership in the development of public sentiment behind sound forestry, to stand back of the Forest Service and State foresters in their work, and to carry through the legislative and other public measures that are needed is the American Forestry Association. It is the only national organization equipped to do this work. We propose to make it a vigorous and effective agency, that will command the confidence and secure the support of the whole country.

There are three ways in which the American Forestry Association can achieve its purposes: The first is, as a great educational agency, to bring before the people of the country the facts about forests and forestry, to show the steps necessary to bring about forestry, to inform owners of woodlands about the methods of practice adapted to different conditions, to diffuse information about the utilization of forest products, to teach the importance

of forests for recreation and health, and to promote the conservation of wild life.

The second essential activity of the Association will be to organize all of the educational forces of the country in support of the forestry movement. The Association will assist existing local organizations and will reach out into

regions where there is now little interest in forestry and aid in building up new forestry associations. It will unite the efforts in forestry of various civic organizations, scientific societies, and associations of all kinds whose purpose is to advance the interests of the country. It will aim to bring into our school systems, through nature study and otherwise, the principles underlying the right use and development of forests.

The functions of the Forestry Association are not, however, confined to general educational work or to the organization of forestry activities. It has also a responsibility in forwarding public policies, both national and local. We propose to take a leadership in matters of public policy and to take a definite position in regard to various issues that may arise from time to time. The Association will stand back of wise measures that are in the interest of the

public; it will oppose with all its strength those which it believes to be unwise or wrong.

The work of the Association will be accomplished in part through its magazine and in part by the activities of its officers. *AMERICAN FORESTRY* is the principal instrument for the educational work of the Association. It will continue to be popular in character. There is no



**COL. HENRY S. GRAVES, NEWLY ELECTED PRESIDENT OF
THE AMERICAN FORESTRY ASSOCIATION**

Colonel Graves was formerly Chief Forester of the United States and is now Dean of the Yale Forest School.

thought, nor has there ever been any thought, of making it a technical magazine. Emphasis on this point is necessary because of the impression created by statements recently circulated that it would deal chiefly with technical matters. The magazine will, however, be informational and in a real sense educational. The aim is to develop a strong editorial policy and to make it an effective organ to forward the definite purposes of the Association. It will deal with every phase of forestry and appeal to a wide range of readers; to foresters, farmers, lumbermen, manufacturers of forest products, engineers; to students of nature and those interested in public parks and recreation, in the esthetic values of trees and forests, and in wild life.

We have the opportunity in the immediate future to take a long step forward in forestry. The American Forestry Association can be made a factor of great influence and power in working out our forest problems. I appeal to every citizen who is interested in making our forests and their products render a better service in our national development to join in this public undertaking.

The American Forestry Association is the oldest forest agency of the country. It was organized over 45 years ago. It was the chief organ of public sentiment in the early days and was largely responsible for setting in motion the American forestry movement. The association has seen the creation of a public sentiment favorable to forestry over a large part of the country, the establishment of a great system of National Forests and of National Parks, the initiation of important forestry undertakings in about 30 of our States; the building up of a profession of two or three thousand technical foresters, and the beginnings of a new movement of forestry that is commanding the interest and support of large numbers of private owners of timber land, lumbermen, and manufacturers of wood products.

We are entering a new era in the development, use, and conservation of our forests. The country is facing new problems in regard to the supplies of forest products and in securing a service from forests in local industrial development. Of great significance is the fact that this is now being realized by the country, and by the industries engaged in the production of lumber and in the manufacture of its products.

The events of the war and since the war have called attention to the urgent industrial problems that are the direct consequence of the progressive depletion of the supplies of high-grade virgin timber. I refer to the questions of securing adequate and continuous supplies of raw material for the great paper and pulp manufacturing industry of the East, the necessity to bring in construction and general utility lumber from constantly increasing distances with the resulting high cost for transportation, the freight hauls of hardwood material needed by the wood manufacturing industries, and the increasing difficulty in obtaining certain materials at prices within the reach of the average consumer. Public and private agencies are assembling authentic data regarding the present economic

situation in forestry. The results of these studies are deeply impressive. They show that our losses by unnecessary forest fires are still staggering in amount.

The amount of material used and destroyed by fire or otherwise is still far greater than what is produced by new growth. In State after State the net amount of land reduced to unproductiveness is still increasing. We are still losing ground and are still drawing on our forest capital, in spite of the vigorous efforts that are being put forth to check losses and to restore the forests.

The consequences of the depleting process are already being felt. The transportation burden reflected in the prices of forest products is an embarrassment and even a hardship to many industries and individuals. The effect of using up the timber resources is a serious injury to many communities through the closing of industries through the exhaustion of taxable resources, and the general impoverishment of whole localities.

It is clear that there must be a larger program of forestry to meet this situation, one in which the public will take the leadership and in which every owner of woodlands will participate. Soon after the war it was proposed by the National Forest Service that the Government itself should inaugurate a broad policy of forestry that would bring into co-operative effort all the forest interests of the country. This idea has made very large headway and is now widely considered as essential, though there have been differences of opinion as to the specific measures to be adopted.

There is very general agreement on the need of certain specific legislation by Congress, as a first step in the direction of a national policy of forestry. This program involves: (1) A larger program of co-operation with the States in fire protection; (2) co-operation with the States in procuring and distributing material for forest planting; (3) assistance to farmers in reforestation and in the care of their woodlands; (4) the extension of the National Forests by purchase under the authority of the Weeks law; and, (5) a program of research, much larger than at present, in forest production and in the handling of forest products.

While this program is first of all one of federal legislation it is essentially a plan to bring about action in forestry all over the country. It touches the heart of the problem which is the necessity for concerted action by the Government, by the States, and by every private interest directly or indirectly concerned with forests or their products.

There is no single formula that will solve our forestry problem. Legislation is required by the Government and by all the States, in extending the public forests, in organized fire protection, in reforms in taxation, and the like. But the ultimate aim is in all cases the practice of forestry in the woods and a better handling of forest products.

I have accepted the position of President of the American Forestry Association because I believe that this is the national organization that can most effectively carry forward this movement.

The Australian Bush

By HARRY D. TIEMANN

Late Adviser to Victorian Forest Commission

WHAT kind of a mental picture does the word Australia bring to mind? Vast treeless plains, with kangaroos hopping about and scattered tribes of savage blacks, or magnificent forests of great trees, with deep, shady dells and high, rocky mountain peaks?

As a matter of fact, Australia has some of both, but it is the forested zones which are the most thickly populated and where all the large cities are located. Little has been published in America concerning the forested and the civilized portions of this great continent. A Chicago editor, of good standing, wrote to me and wanted to know what I, as a forester, found to do in *treeless* Australia! I answered him with a photograph similar to the illustration on this page.

THE REAL BUSHMAN

Probably less is known by the people of the United States about the forest physiography of Australia than of any other civilized country in the world. Much has been written, however, about the aboriginal cannibals, wrongly called "bushmen," in this country. In Australia the term "bushman" is equivalent to our "lumberjack," and he would hardly feel complimented to be classed as a cannibal! The natives are referred to as "the blacks" or as the aborigines, in more formal parlance. A good deal has been said about the curious kinds of native animals, so different from those in other parts of the world, and of the fabulous size of the eucalyptus trees, but little has appeared describing the ordinary, every-day forests of this far-away country.

ONLY 5 PER CENT FORESTED

The area of Australia (including Tasmania) is almost exactly the same as that of the United States, excluding

Alaska and the insular possessions—2,974,581 square miles. A little over one-third of this is practically desert, with less than 10 inches annual rainfall, and this lies outside the tropics. Of the remainder about half is tropical, leaving about one-third of the entire area fertile and extra-tropical. A large portion of this third is prairie land, suitable for sheep, cattle, and grain. If you will

glance at the map you will note that all the large centers of population—Brisbane, Sydney, Melbourne, Adelaide, and Perth, as also Hobart and Launceston, in Tasmania—are seaports or near ports. The most habitable part of the continent lies in a zone roughly varying from 50 to 200 miles in width, extending along the seashore.

The well-forested area coincides closely with this coastal zone, including the whole of Tasmania. Compared to the total land area, Australia has less than 5 per cent of forested land, and according to Mr. Lane-Poole, former Conservator of Forests of Western Australia, less than 2 per cent of merchantable timber. Of course, scrub and mallee growth cover a much greater area, extending to the borders of the "Nullarbor" Plain, as the barren central desert is deferentially called.



SPLENDID KARRI IN WESTERN AUSTRALIA

These trees vie in size with the Mountain Ash of Victoria. A man at the base of the middle tree is holding a handkerchief above his head, giving a comparative idea of the fine size of the trees.

THE HOME OF THE EUCALYPTUS

The predominant tree of Australia is the eucalyptus, of which two hundred and eighty-three species are described. Next in number of species comes the Wattles or Acacias, of which there are at least two hundred and fifty, but only a very few are of importance commercially. While these two genera are common throughout the continent and may be said to be characteristic of the Australian forest, there are a great many other native species of prime importance for lumber. The forests as a whole, however, are very deficient in softwoods, and consequently plantations are



GIANT TREE-FERN

A forest of tree-ferns and eucalypts. The writer is standing between Forest Commissioners MacKay and Code, with his hand on the trunk of the giant fern.

almost exclusively conifers. The order of the Coniferales is represented by eleven indigenous genera. The little island of Tasmania has several excellent conifers, but they occur only in small scattered groups. They are the Huon Pine (*Dacrydium franklinii*), Celery Top Pine (*Phyllocladus rhomboidalis*), and King William Pine (*Athrotaxis selaginoides*). On the main land, chiefly in the northeastern tropical portions, are three splendid conifers, but likewise scarce, the Araucarias, "Bunya" Pine and Hoop Pine (*A. bidwillii* and *A. cunninghamii*); and the Queensland Kauri (*Dammara robusta*). These trees occur along the northeastern coast, mostly in Queensland. Scattered throughout the interior drier regions, and often forming considerable forests in pure stands, is a class of trees much resembling our Monterey Cypress, but generally smaller and slow of growth. There are about fourteen native species, all of the genus *Callitris*. The wood is rather hard, somewhat like Yew, and the timber is small and knotty. It is used only locally.

CONIFERS WITH BROAD LEAVES

Curiously enough, many of these Australian conifers have broad leaves. The Kauri Pine has a smooth, thick leaf, somewhat the size and shape of our Mountain

Laurel, and the Celery Top Pine has a featherlike leaf much the shape of celery, as its name signifies. It is interesting to note in this connection that the Tanekaha of New Zealand (*Phyllocladus trichomanoides*) not only has a broad leaf, but it is actually a compound leaf. This is getting very far from our popular conception of conifers with "needle-like leaves."

It is possible to give only a very superficial discussion of the Australian forests as a whole in a brief article. The almost universal prevalence of the two principal genera, the Eucalyptus and Acacia, give a certain degree of uniformity to different types, which is kept from becoming monotonous, however, by the many auxiliary species and by an immense variety of other plants and flowers. The State of Victoria contains some of the finest of the Australian bush and is at present relatively the best forested State.

The forests of the country vary greatly in different regions. The western and eastern forests are quite distinct, and northern tropical forests are very different from those in the temperate regions. So also the character of the drier interior regions differs greatly from that of the coastal belt. They are nearly all alike in one



TWO STRONG CHARACTERS

An Australian pioneer, Mr. J. W. Lindt, and a large Mountain Ash, on Black's Spur, in Victoria. These splendid trees, with smooth, whitish bark in the tops, add great dignity to the native forest.

respect, that the predominant trees are species of *Eucalyptus* and *Acacia*. Bordering on the drier interior, however, are regions entirely devoid of *Eucalyptus*, the trees being largely species of *Callitris* (Cypress Pines) and *Casuarinas* (She or Bull oaks) and dwarf varieties of *Acacia*.

THE WONDER FERNS OF THE VICTORIAN BUSH

A most striking character of these forests is the undergrowth of Fern trees. They form by all odds the most exquisite feature of the native bush and something over which a stranger is sure to fall in rapture. No words can exaggerate the beauty of these wonderful relics of past geologic ages. All through the tall poles of the *Eucalyptus*, on the hillsides, but more especially along the gullies, are seen the brilliant green crowns of these wonder ferns, sometimes 25 feet in diameter and of perfect form, contrasting in color with the somber sage green of the *Eucalyptus* and *Acacias*. They are frequently 15 to 25 feet high and sometimes 40 or 50 feet, and of great age, often several hundred years old! Indeed, it would appear that they are of the same age as the giant trees of which they form an undergrowth. There are two kinds, the taller (*Alsophila australis*) growing on the hillsides and the one with largest crown (*Dicksonia antarctica*) growing in the damp gullies.



"ALICE IN WONDERLAND"

Only this time it is an all-too-real wonderland—this forest undergrowth of beautiful fern trees. No words can exaggerate the beauty of these wonderful relics of a past geologic age, with their brilliant green-crowns, sometimes twenty-five feet in diameter.

In addition to the ferns, there are many other shrubby plants forming an undergrowth to the tall timber. Such shrubs as "Sassafras," "Hazel," "Musk," "Dogwood," "Satin Box," and "Laurel" might lead one to suppose that he were among familiar plants, until he examined them and discovered that they bear no botanical connection with plants of these names in the Northern Hemisphere. The trees also bear familiar European names, but beyond the names and certain fancied or real resemblances of the wood there is no relation to the northern prototypes. For example, "Mountain Ash" and "Tasmanian Oak" are *Eucalypts*, "Hickory" and "Willow" are *Acacias* or *Wattles*, "Maple" is a *Flindersia*, "Walnut" is a *Cryptocarya*, "She Oak" is a *Casuarina*. Then there are the so-called Native Cherry, Native Pear, "Silky Oak," "Honeysuckle," and others. There is one tree, the "Beech," which is quite closely allied to our own *fagus*. Curiously enough, all the native trees and shrubs of Australia are evergreens—that is to say, they are not deciduous, even those resembling our own to a certain extent, with thin, broad leaves.

AUSTRALIA'S LARGEST TREES

The composition of the bush varies greatly, according to location. The Mountain Ash (*Eucalyptus regnans*), Messmate (*E. obliqua*), and Woolly Butt (*E. delegatensis*) are



"GRASS TREES" IN THE VICTORIAN BUSH

This peculiar Australian plant has a stout, trunklike stem bearing a tuft of long, grasslike wiry foliage and a tall flower stalk with a dense spike of small flowers. It abounds in resin known as blackboy gum or scarid gum.

probably the most abundant and important trees of the Victorian bush. They do not grow in clear stands, but in mixture with many other Eucalypts, Wattles, and Beech. The Mountain Ash is probably the largest tree in Australia. While it grows to great heights, as do most of the Eucalypts, it seldom exceeds 300 feet in height and does not compare with our redwoods or with the New Zealand Kauri in diameter.

Much has been written on the immense size of the Australian Eucalypts, but it seems probable that early accounts have been greatly exaggerated. At the Melbourne Exposition an effort was made to locate the largest living trees by offering prizes for authentic accounts. The largest found was a Mountain Ash in Gippsland 326 feet high. Subsequently one was found 347 feet, in the Dandenong Mountains.

The trees of the native bush are very straight, with round trunks as soon as the buttressed root swelling is past, and with remarkable clear lengths, the first large limbs often being 100 to 150 feet or more above the ground. These splendid trees, with the long stringy bark hanging from half way up the trunk and with smooth, whitish bark in the tops, give a cathedral-like dignity to the forest. The foliage is very open and allows considerable sunlight to filter through to the tree-ferns and other shrubbery far below.

FORESTS OF UNIQUE COLORS

The color of the Australian bush is quite different from that of our woods. Except for the gullies, the impression is a bluish green shading to orange-olive. In the spring and early summer the young twigs become a beautiful reddish purple to crimson or brownish orange, which is often very brilliant in the bright sunlight. The effect is unique and beautiful and the young shoots are much used for decorative purposes. All of the colors are soft and harmonious rather than bright. Contrasting with the rather somber colorings of the trees are the bright greens of the ferns and the shrubs in the shady gullies, without which the bush would become decidedly monotonous.

Growing in the damper portions of the bush and in the gullies are two species of great importance on account of the quality of their lumber—the Blackwood (*Acacia melanoxylon*) and the Beech or Myrtle (*Nothofagus cunninghamii*). Both have dark-green foliage. That of the Blackwood is familiar to Californians, where many varieties are used for ornamental and street trees. It is one of the best and most beautiful cabinet woods in the world. The trees, however, never over plentiful,

are becoming quite scarce.

The foliage of the Beech is exceedingly beautiful, with its very small, alternate, holly-like leaves arranged flatly and thickly on the stems. The Forest Commission has adopted a sprig of this Beech as its insignia.

The Mountain Ash is not only a splendid furniture wood, when properly dried, but it is used for all parts of buildings—scantlings, flooring, siding, weather-boarding, ceiling, and even shingles. Woolly Butt, which grows at higher elevations, usually from 2,000 to 4,000 feet, is an equally good timber for general purposes and closely resembles our Chestnut wood.

THE OLD STORY OF RING-BARKING AND FIRE

Fire is the bane of Australian forestry, even to a greater extent than in this country. Popular sentiment has heretofore been largely lacking, particularly among the settlers and cattlemen. Enormous tracts have been laid waste by "improving" the land

with ringbarking and fire. It is the old story of the conflict between the pioneer and the forest. It is his enemy; the easiest way, and indeed often the only reasonably practical way from his standpoint, to clear the land and obtain grazing for his cattle is to ringbark and burn, and little does he care, as a rule, whether or not the fire stops at his boundary line or escapes onto Crown land.

A good average stand of millable timber runs 30 to 50 thousand feet per acre. Of course, where there are many of the old large trees, it may run much more than this; but trees over 5 or 6 feet in diameter are much too difficult to handle to be attractive to the lumberman.



THE STRAIGHT STEMS OF VICTORIAN
"MOUNTAIN ASH"

A great utility wood, the Mountain Ash is not only good for furniture, but is widely used in building construction and even for shingles.

The Land Beyond Kona

A Little Journey to Mount Mitchell, the Highest of the Appalachians

By E. E. MILLER

THE mountains look on Kona and Kona looks on Toe River.

The mountains that look on Kona are not very impressive mountains. One comes to the place over the very roof of eastern America, winding high among the great hills and seeing still above him the 6,000-foot peaks of the Black Mountains, or reaches it through the narrow gorge of the Nolachucky, where the Great Smokies, gray, rock-bastioned, scantily wooded, rise straight up from the river's brink to shoulder out the sky and awe with their rugged majesty. At Kona the lower ridges come close and one misses the great sweep of the mightier mountains.

Nor is Kona much to look on. The front of the little railroad station rests on the cliff; the rear is supported by poles that stand at the river's edge. The track for the main line of road has been blasted out of the rock; the branch line begins with an ancient-looking bridge over the river. Above the railroad, in a single building, are the post-office, the store, and the restaurant. An old, vacant building, held out of the river by pole supports, faces the business center from across the railroad. That is Kona.

Toe River is worth looking on. It was the Estatoe to the Indians. A rude and unpoetic race has cut the music out of the name and reduced it to its present absurdity; but the river is still beautiful. It is a shallow, clear-

flowing stream, winding among polished stones and over sands all aglitter with mica, and singing to itself as it runs. The traveler who must wait an hour or two in Kona until the train on the branch line gets ready to run can do no better than to look and listen to the shimmering, murmuring Estatoe.

NO ESCAPE FROM THE MOUNTAINS

The train will start in due time. One need only wait, being as patient as he can, both before it starts and after. It is a freight train, with one coach on the rear for passengers, and it follows the South Toe, climbing steadily. Across the stream and just a little back from the railroad track the hills go up, wooded or grass-covered, or planted to little patches of corn, while every now and then the windings of the road reveal the great sweep of the Green Mountains, which the train is approaching, or the massive bulk of the Black Mountains, from which it seems vainly trying to get away. One cannot escape the mountains here—a towering blue wall yonder, a suddenly uplifted peak close by, far away a haze-dimmed summit glimpsed for one thrilling moment between earth and sky; it is to these his eyes turn; it is their memory he will carry in his heart for many days to come.

When the road leaves the flower-bordered stream to cross the green fields of the uplands to the town of Burns-



THE SIDES OF MOUNT MITCHELL ARE NOT RUGGED. THESE HIGHEST OF OUR EASTERN MOUNTAINS ARE WELL COVERED WITH SOIL, AND TALL FORESTS GREW ON THEM. THE FORESTS HAVE MOSTLY BEEN CUT NOW, AND FIRE HAS FOLLOWED LUMBERING IN MANY CASES. ON THE LOWER SLOPES HARDWOODS GROW ALONG WITH SCATTERED HEMLOCKS AND SPRUCES

ville, the hills lift themselves all about, the higher mountains looking down on the little town and its little hills with a protecting air. They look down, too, on the statue of the valiant Ottway Burns, for whom the town was named, and so looking they should ever smile. Ottway Burns—he was a captain or admiral or something in the War of 1812—was no doubt a man to be honored, but this statue of him is the funniest on record. The most dyspeptic old cornudgeon can safely eat just as many as he desires of the flaky hot biscuits the town hotel serves and have no fear of indigestion if he will only go out after breakfast and gaze for a few minutes on the hero's cherubic face, drawn sword, and comically nautical headgear.

THE OLD STORY OF BOOM LUMBERING TOWNS

Burnsville is a "little old farming town," but Pensacola and Murchison and Escota are, or have been, boom-built lumbering towns. They lie in the fertile little valley of Cane River and a railroad runs to them from Burnsville—that is, it runs as far as Murchison. The rails have been torn up beyond there and only a few houses are left where the mills once ran and the electric lights blazed and several hundred men worked in the

town that was Escota. Corn is growing over most of it now.

It is the old story of the lumber camps. The lumbermen come in, put up great mills, build railroads, cut off the timber, then go their way, and the brief activity and prosperity of their day are things of the past. An old story and a sordid one, a story of exploitation and not of development.

Murchison, fearful that its time will come, still lives, and at Murchison lives 'Dolph Wilson, hotel-keeper, guide, trapper, bear-hunter, and lover of the hills. It was from his place I started to climb Mount Mitchell. He is supposed to live at the foot of the mountain, but one can follow the old railroad bed up Cane River for five miles before he turns to real climbing. All the time, however, he is going up, and the big ridges that hide the King of the Appalachians from him are but folds of the monarch's garments that trail down into the lowlands. Real climbing begins at an elevation of about 3,000 feet, and from there to the top, 3,700 feet higher, is continuous.

This upland country is a land of musical waters. Not one of its many streams is silent. From the little rivers that plunge and



LOOKING DOWN WEST FROM MOUNT MITCHELL. THE HIGH POINT TO THE RIGHT IS YEATES' KNOB. "ONE CANNOT ESCAPE THE MOUNTAINS HERE—A TOWERING BLUE WALL YONDER, A SUDDENLY UPLIFTED PEAK CLOSE BY, FAR AWAY A HAZE-DIMMED SUMMIT GLIMPSED FOR ONE THRILLING MOMENT BETWEEN EARTH AND SKY"



LOOKING DOWN GRAYBEARD MOUNTAIN FROM THE PINNACLE. THE MOUNT MITCHELL MOTOR ROAD CAN BE PLAINLY SEEN. "A VIEW . . . LOOKING DOWN A THOUSAND FEET INTO THE THICK-GROWN RAVINE"



LOOKING NORTH FROM MOUNT MITCHELL. GRANDFATHER MOUNTAIN IN THE MIDDLE DISTANCE. "IT IS A VIEW TO THRILL, TO INSPIRE, TO HUMBLE"

splash over their gleaming cliffs to the tiny spring branches that run almost hidden under shadowing clumps of rhododendron, every stream is singing constantly. One often hears them before he can see them. Cane River becomes more vocal as well as more beautiful as one follows its upward course. Great boulders lie in its bed, and the hemlocks grow beside it, and rhododendron, and lilac-hued queen of the meadow, and gleaming cardinal flower. The flowers become fewer deeper in the hills, but the rocks, which break the river's flow and are broken by it, become more numerous and make of it a succession of deep, dark pools and foaming, flashing rapids. Far up its course are the Blue Sea Falls, bits of perfect beauty, where the river pours down with ceaseless spray and the shining whiteness of perpetual foam.

MOUNT MITCHELL SCARRED BY AX AND FIRE

The sides of Mount Mitchell are not rugged. These highest of our eastern mountains are well covered with soil, and tall forests grew on them. The forests have mostly been cut now, and fire has followed the lumbermen in many cases, so that vast tracts are but a desolation. Two railroad tracks we crossed in our journey to the top, and on the neighboring mountains the long road-scars wound in and out of the small timber yet

standing for miles and miles. On the lower slopes of these mountains hardwoods grow along with scattered hemlocks and spruces. Above the hardwoods comes the spruce belt, and higher still the dark ranks of the balsams.

The State of North Carolina holds the top of the mountain as a park, and here the forest has been protected. We were in the balsams now, and while going is not exactly of the best in a balsam wood, it felt like a breath of new freedom to be able to look about as one chose. On old fallen logs the young balsams were starting their growth—a process that has been going on for centuries. The roots of the old trees stand up in the air and there are deep holes under

and about them. With the young balsams the bracken grows, and underneath this tangle is a soil-carpet of moss and oxalis. One walks through the balsam woods with the feeling that he is in the presence of many silent centuries.

I climbed the tower on the mountain top and watched the sun go down behind a bank of black clouds. Looking to the four quarters, I saw mighty peaks rising all about me—Clingman, Black Brothers, Pisgah, and the rest. It is a view to thrill, to inspire, and to humble.

August as it was, the wind came sharp and cool and



LOOKING DOWN EAST FROM MOUNT MITCHELL. TABLE ROCK AT THE EXTREME LEFT, MIDDLE DISTANCE. "ONE WALKS THROUGH THE BALSAM WOODS WITH THE FEELING THAT HE IS IN THE PRESENCE OF MANY SILENT CENTURIES"

I went down to the warden's house. It is a three-room cabin built under and against an overhanging rock. Only one room is used for living purposes. In it we had supper and in it we went to bed—seven grown men of us. It rained in the night and next morning the mist hung over everything. My companion and I had to leave the mountain top, however, and down we went, following another trail through the wet bushes.

A LONE SURVIVOR OF A ONCE GREAT COMPANY

Two things make this trail notable: One is a view from a narrow ridge where, looking upward two thousand feet to the summits and down a thousand into the thick-grown ravine of a mountain stream, I got an impression of strength and majesty scarce exceeded by the wonderful

year, even when the first cutters have thought them exhausted. But there can be no yields for possibly a hundred years from the burned-over acres now grown up to fire cherry. Some foresters doubt if even two or three centuries will see any adequate restoration if Nature is left to work alone. Looking out over these burned areas, it came to me as never before how short-sighted and unprofitable and self-destructive "business" can be. The soil of this section has been robbed, and its people and the future for generations, that a few men might make big profits for a little while.

THE TASK OF REDEEMING WASTED AREAS

One of the seven men who slept in the warden's cabin that night was a caretaker on one of the new Na-



"ABOVE THE HARDWOODS COMES THE SPRUCE BELT, AND HIGHER STILL THE DARK RANKS OF THE BALSAMS." THIS IS MOUNT MITCHELL, SEEN FROM BLACK BROTHERS. THE GOVERNMENT OBSERVATORY TOWER CAN JUST BE SEEN ON TOP OF THE MOUNTAIN. THE CENTRAL POINT IN THE MOUNTAIN GROUP AT THE RIGHT IS CHINAMAN'S PEAK, 6,611 FEET HIGH

stretch of the heights I saw from the mountain's top. The other is the "Big Poplar"—a lone survivor on these slopes of a once great company. Thirty-three feet in circumference as high as a man can reach, it rises like a colossal pillar above the trees about it. Hollow, of course, and valueless for lumber, else it would long since have gone to one of the big mills that held sway in the valley below. Into its hollow, the story goes, four men crept to play cards one winter day. They built a fire and left it burning. It caught the tree and burned for some days before it was put out, further weakening the walls, already none too strong. Before many years the big poplar, doubtless a tall tree when the first white man crossed these mountains, will be but a memory, its end hastened by the carelessness of men who knew enough to play cards, but not enough to respect the lonely giant left from early years.

Timber grows to be used, of course; but use is one thing and destruction is another. The forests of this section have been in great measure destroyed. Given but half a chance, the woodlands go on yielding year after

tional Forests in the vicinity. The Government owns considerable land in this section and is trying to protect it from fire, but the amount purchased is but a start at what should be bought, and only the first steps toward real protection have been taken. The Nation and the States have yet to realize just how much they need to do to save the remaining forests of the mountain sections and to redeem the wasted areas, and the people of this region have yet to realize just what the forests mean to them.

Any system of agriculture or industry which does not make the preservation of the forests one of its chief considerations is an inadequate system for the hill country. So is any program of social advance for the mountain people a faulty program which does not take into consideration the mountains themselves and the trees that grow on them.

About the people of these mountains much nonsense is talked and written. The conditions usually ascribed to the section—poverty, illiteracy, stubborn clinging to old customs and manners of thought—still persist. The

mountain cabin still exists; so does the mountain moon-shiner; so do squirrel rifles and homespun clothing and primitive methods of living. But none of these is the rule any more. They are the exceptions, and the whole region is misrepresented when its most extreme conditions and practices are pictured as the general run of things.

SHADOWS THAT TOUCH THE PAST

There are old-time log cabins, with clay chinking and stone chimneys, in the country that lies in the shadow of our highest Appalachians. Some of them are empty, deserted; some still lived in. Along with them, and

and modes of speech which might well be preserved, but the spirit of these North Carolina hills is the modern spirit.

The agriculture of the section is not primitive. The soil is fertile, and the farming system, based on grass and cattle, is a sound system. The farmers are practically a self-supporting lot, and they came through the recent agricultural depression in much better shape than did the run of farmers the country over. Gullies and poor fields are few. The land is green and prosperous-looking.

Still, with the very limited amount of tillable land in



CAMPING ALONG THE MOTOR ROAD TO MOUNT MITCHELL. THIS IS APPARENTLY ONE OF THOSE PARTIES WHO ARE STAYING OVER NIGHT FOR THE PURPOSE OF ENJOYING THE SUNSET AND SUNRISE IN THE INCOMPARABLE "LAND OF THE SKY"

more numerous than they, are farm-houses of modern construction with paint on them. I saw barefoot women on this trip and shy little mountain girls growing up into the delicate, short-lived freshness and with the high-pitched nasal voice of the typical hill woman; but I did not see any linsey-woolsey, or hear any spinning wheels, or run across any of the terrible dialect still attributed to the folks of the hill country.

This highland county has scattered its schools into every populated corner, so that no child need grow up without an education. The manners and the customs of most of its people are not very different from what one would find in any fairly prosperous farming section. Picturesque types there are, and some unique customs

the region and the comparatively thick population, new methods of farming must gradually be worked out, if the people are to make a good living. Small fields of corn and wheat and large fields of grass cannot support any large number of people to the square mile. This county has a population of over 15,000 and an area of 298 square miles. The largest town is but a village. The lumber industry, as a big commercial proposition, is practically a thing of the past. The mica and spar mines are worked on a small scale and give regular employment to only a few people. It is essentially an agricultural county and must live on the products of the soil.

[Continued on Page 104]



The One-Way Motor Road to the

GETTING back to nature by way of a one-way motor road is the unique experience of visitors to the summit of Mount Mitchell, the highest peak east of the Rockies.

Mount Mitchell is known as "the top of Eastern America" and as a result of the new motor highway it is gaining new vogue with the tourists who yearly flock to the mountains of western North Carolina. In the heart of the world-famed Blue Ridge of the Alleghenies, its altitude of 6,711 feet gives it pre-eminence among the lofty peaks of that section of the country.

The new road and its one-way traffic compelled the admiration of more than 25,000 visitors during its first season of operation in the summer and autumn of 1922. An eighteen-mile stretch of smooth highway, with traffic moving in a single direction, is of itself enough to attract attention. When this highway reaches the pinnacle of half a continent, and carries the motorist over a well-built road of even surface and railway grade, through marvelous panoramas of scenic beauty, the visitor finds reason for wonder and amazement at every turn.

Mount Mitchell is an old friend of the western North Carolina tourist. In the past the visit to the summit was limited to those who were willing to spend a day in making the ascent, two nights and a day in camp at the

top, and a third day in the downward journey. By NORMAN C. M. The sole exception to this custom was during a few recent years when the peak was accessible by a logging railroad which handled tourist traffic as a by-product of its timber operations.

With the passing of the lumbering activities the railroad was abandoned, and tourists were again left to the choice of hiking or horseback travel. It was then that the motor road was brought into existence by the utilization of the roadbed and bridges of the dismantled railroad. The fundamentals of a motor highway were ready at hand. As far as grade was concerned the conditions were probably better than they would have been if the highway had been built anew. Steam railway operating requirements had called for easy grades, and the motorist now receives the benefit of these through a maximum grade of 6 per cent and an average close to $3\frac{1}{2}$ per cent. Such gradual climbing is unusual in mountain highways, even in these days of advanced road building.

Operation of this unique highway called for special methods in the handling of the traffic. Based on the roadbed of a railway, the thoroughfare was necessarily limited as to width. Because of the topography, it was subject to sharp turns where points ahead would be hidden from the view of motor drivers. On the railroad these turns



to the Summit of Mount Mitchell

ERMAN C. McLOUD had been "switchbacks," for the good reason that the steep mountainsides afforded no room for sweeping turns. On the new highway they became hair-pin turns or loops. To guard against danger at these points, and to prevent the risks involved in meeting vehicles moving in the opposite direction, the system of one-way traffic was devised.

Through the operation of this system the motorist begins the long ascent in the full and comforting knowledge that he will meet nobody traveling downward. He knows that his sole problem of safety is to drive his car with due regard to the sharp turns, with no worry as to the sudden appearance of some reckless motorist coming against him. With this assurance he is able to make the eighteen-mile trip at a rate of speed which is well within the bounds of caution, and which would not be possible with opposing traffic. As a result of this system, the motor party may leave Asheville at ten o'clock and have luncheon at the summit, thirty-six miles distant. A factor in the time of the journey is that the highway is closed to horse-drawn vehicles, with their attendant influence in slowing down the stream of traffic.

This one-way traffic is achieved by regulations strictly enforced by the owners of the road. Each end of the highway is guarded by a gate. Ascending cars are

allowed to enter at the lower terminus between the hours of eight o'clock in the morning and one o'clock in the afternoon. After one o'clock the lower gate is closed. At that hour a special guard starts for the upper end of the road, as a safety patrol, in a car known as "the trailer." The object of this patrol is to see that the road is clear after the morning traffic, and that no disabled cars are stranded by the roadside. If a derelict is encountered the man in charge of the trailer gives first aid in the way of repairs, or tows the disabled car to a place in which it will not interfere with the downward traffic of the afternoon.

For the upward trip of the trailer there is an allowance of two and a half hours, which affords time for the handling of ordinary emergencies. Under the rules the gates at the upper terminus cannot be opened for downward travel until the trailer arrives and reports that all is clear.

Mount Mitchell is a part of the North Carolina State forest and is at the borders of the Pisgah National Forest. The motor highway passes through a portion of the National Forest and enables the tourist to see some of the beneficial results already achieved by the United States Forest Service in the handling of this comparatively new section of the national domain.

Two Forest Rangers, the Falcon and the Jay

By EDWARD HOWE FORBUSH

"A BIRD so beautiful as the Blue Jay must be very rare now in your country," said a titled Englishman to a friend of mine sojourning for a time at the seat of the British Empire. Had his lordship lived in New England he would have known that this bird of beauty is not only common but commonly execrated. Probably every opprobrious epithet that was ever applied to a bird has been hurled at the Jay. Murderer, pirate, cannibal, robber, thief, kleptomaniac, rioter, tippler, rascal, disturber-of-the-peace—these are some of the vituperative appellations that have been applied to him, not only verbally, but in print. Minot says that "in the slaughter of babes (meaning birdlings) the Jay out-Herods Herod," and that in the stealing of grain he rivals the Crow.

I have never known a Jay to occupy the nest of another bird, but he has been known to tear down nests and to eat the eggs and young of Robins and other small birds. He occasionally dines off the brains of nestlings and he steals the farmer's corn. More evil than this may be alleged against him,

for he has even been known to kill small chickens and young pheasants and to chase with apparent deadly intent full-grown song-birds.

He is a born thief. He steals from his own kind. A correspondent writes me that he saw a Jay busily engaged in hiding corn in a crevice. When the feathered miser had finished his task and sought fresh fields, another Jay, which had been hiding in a near-by tree and watching the operation, quietly sneaked up, uncovered the hoard, and hid it in another place. Possibly Jays may steal one another's eggs, as I have found their eggshells

on the ground pierced in exactly the same manner as Robins' eggs when stolen and sucked by Jays. It may be that the Robins themselves take revenge upon the Jays, as I have frequently seen the former driven away from nests of the latter by the exasperated vituperating owners; but both Robin and Jay unite their forces in defending their nests from their common enemy, the squirrel. The Blue Jay seems to have a crow-like mania for stealing and hiding bright-colored objects, so that it is unsafe to leave small articles of jewelry where he can get them.

In autumn Jays seem to delight in gathering early in the morning in small flocks near some woodland dwelling

and "yawping" in raucous chorus, seemingly a nothing but the empty air, and waking everybody in the neighborhood.

The very name of the Jay is anathema to the hunter, for that profane racket, its alarm note, warns every shy creature in the woods. The bear hears it and sneaks away. The deer is instantly on the watch. Many hunters, aware of this, take their revenge by shooting every Jay that



(Photograph by E. H. Forbush.)

A BLUE JAY ENTERING HER NEST, UNDOUBTEDLY BACK FROM A MARAUDING TRIP. THE TAIL POINTS TO THE DIRECTION FROM WHICH THE BIRD CAME THROUGH THE BRANCHES

comes within range of their vision.

Some budding poet has immortalized the nest-robbing proclivities of the Jay in the following lines:

With twigs and strings and various things,
The Robin builded it strong;
And as he plaited them into shape
He caroled a cheerful song.
"Why so busy?" the Jay bird asked;
"What are you doing, pray?"
"I suppose," said the Robin, "I'm building a nest
For you, you blooming Jay!"

The Blue Jay's tiptling habits are mainly confined to the Sunny South. "Naw, sir," said a southern stable

boy; "I run him down. He's drunk on mad-berries. I didn't shoot him." The Jay's head wagged ridiculously in the effort to hold it up. In Florida the Jay, like the Robin, indulges too freely in the intoxicating fruit of the "pride of China," while in the north the bird is sometimes captured through its fondness for corn soaked in whisky.

Admitting all these faults, the fellow is an amusing,



(Photograph by Wilbur F. Smith.)

A BLUE JAY BROODING HER YOUNG. NOTE THE SMILE ON THE FACE OF THE MIDDLE YOUNGSTER

entertaining rascal and also useful as a tree-planter and an insect-destroyer. And then his beauty pleads for him. How few birds are as blue! Not one in the British Isles and only a few in North America. Were the Jay swept out of existence, how his flashing blue, black, and white would be missed from the yellow maples and birches in our October woods. How the still, white void of winter is enlivened by the "steel-cold scream" of the Jay. As Thoreau says, "It is like a flourish of trumpets to the winter sky."

Where the Jay is hunted his shyness is proverbial, but wherever he is welcomed and fed he stays the year round, makes himself entirely at home, and seems to know that he "belongs." James Whitcomb Riley describes his effrontery when he says:

"Mr. Blue Jay, full o' sass
In them base-ball clothes of his,
Sportin' round the orchard jes'
Like he owned the premises."

Every outdoor person in New England knows well the harsh cry of the Jay, but few realize that this elegant bird is an expert mimic and a fine songster. As I lay one

spring day in the Concord woods watching some feeding deer, the clear, sweet piping of an Oriole resounded from a tall tree above my head. The intermittent song flowed on, but the singer sat concealed among the leaves. At last it moved, and lo, it was a Jay! As I stood quietly one October morning in the forest, a troop of Jays passed and one of them emitted the mew of a Catbird. In the afternoon, as I sat writing in my cabin, the melodious distant song of a Catbird came from the woods near by. I went out to investigate and found a Jay ventriloquizing. He was making sweet, soft Catbird music in a shrub-oak only a rod from the cabin. The Jay can imitate the notes of Flycatchers, Chickadees, Wrens, Sparrows, and many other small birds. He rarely does this openly, but usually when hidden among the foliage, for he is an adept at hiding, even among the leafless trees of winter, when he quickly slips behind a limb to escape observation.

Our entertaining rascal can imitate perfectly the "Keeyou" of the Red-shouldered Hawk or the "Killy



(Photograph by E. H. Forbush.)

A BLUE JAY ANXIOUSLY DOING HER BEST TO FILL THE EVER-WAITING MOUTHS OF HER YOUNG

killy" of the Sparrow Hawk. He seems to practise these notes as a joke, perhaps to strike terror into the hearts of the smaller birds. William Leon Dawson reports that he has seen a Jay terrorizing a group of Tree Sparrows by imitating the cries of their arch enemy, the Great Northern Shrike or Butcher bird. The Jay can puzzle and alarm the smaller birds by imitating their cries of distress. Dr. Hatch says that once while hidden in a fallen treetop waiting for a deer he saw and heard a Jay engaged in such mimicry of little birds "as no language can describe." The notes, he says, fell in showers like dewdrops, almost



(Photograph by Dr. S. W. Bailey.)

THE SITE OF A FALCON'S AERY IN BERKSHIRE COUNTY, MASSACHUSETTS. THIS IS 650 FEET HIGH

inaudibly; but they were among the clearest, most delicate, sweetest, and melodious that human ear ever heard. He continues: "If a diet upon canary brains and mocking birds' eyes affords such inspiration, these songsters contribute as much in their deaths as in their lives, and the regally plumed Blue Jay should live forever."

Our versatile bird also has many varied notes of his own which are uttered only in peace and contentment, in the quiet of the woods, where he improvises to his heart's content, practicing the varied pleasing modulations of his lower tones. In autumn, when acorns are ripe, a hidden observer may hear a concert of such improvisations conducted *sotto voce* by the feeding flock. At times the Jay makes in his throat a sound not unlike the tapping of a Woodpecker on a tree-trunk, and often while vocalizing gesticulates and bobs about in a very ludicrous manner.

One of the most interesting traits of this versatile fellow is the habit of storing food against a time of want. Those who feed birds often complain that the Jay carries off quantities of their bird food. Much of this he hides away in knot-holes or crevices of the bark. Horace O'Connor reports that he saw a Blue Jay, with a piece of bread or suet in its bill, light on a maple limb and thrust its find into a hole. It then dropped to the ground, picked up a dead leaf and laid this over the hole; but the wind

blew the leaf away, and the Jay, failing in an attempt to catch it in the air, selected a smaller leaf from the ground and jammed this firmly into the hole, so as to conceal its treasure.

That great American naturalist, Mark Twain, tells an amusing yarn about how a Blue Jay found a hole in the roof of a cabin into which he dropped corn in a vain attempt to fill up the hole. Another Jay finally looked in at the open door and saw that his companion was unwittingly trying to fill up the cabin; whereupon the whole curious clan of Jays that had gathered went into spasms of enjoyment over the joke on their simple friend. This story illustrating the Jay's character, though "somewhat exaggerated," is truer to life than some of the tales of the nature fakirs.

Jays certainly have some queer habits. Mr. J. N. Baskett asserts that he saw a Jay pluck off pungent walnut leaves, lift its wing and rub these leaves into the feathers repeatedly. Who will explain this? Miss Grace Ellicott reports that in nesting time she saw a Jay alight on an ant-hill and rapidly and eagerly seize the large ants. Lifting a wing on one side or the other after each capture, he tucked the victims into the feathers under or behind the wing. He had laid in quite a store when frightened from his task. Mr. W. L. McAtee suggests that the bird was taking advantage of the instinct of ants when disturbed to fasten their jaws on any object. This Jay may have been hurrying to collect a load of food for his ever-hungry nestlings.

The Jay is a devoted parent. Normally a forest bird,



(Photograph by R. L. Coffin.)

THE FALCON'S EGGS IN THE AERY ON THE SHELF OF THE INACCESSIBLE CLIFF



(Photograph by R. L. Coffin.)

THE SITE OF THE FALCON'S NEST ON A HIGH CLIFF OVERLOOKING THE CONNECTICUT VALLEY. IN GETTING THIS PICTURE THE ARTIST LOST HIS CAMERA AND VERY NEARLY HIS LIFE

brooding in somber pines, it has learned, where unmolested, to nest in the city and in some cases even in the vines on verandas; but, wherever it makes its home, it suddenly becomes silent and discreet in nesting time. A female that I watched had her home in a pine grove, with dead twigs scattered all about on the ground; but she did not use such decaying timber for her nest, but went some distance, and with bill and claws, exerting all her strength, broke off tough dead hardwood twigs from trees and with them built a strong platform for her home. After the eggs were laid, her harsh screams were rarely heard, and when the young were hatched she reached the nest in the most secret and roundabout way. The nest was in a pine. When approaching the nest she hopped on a low branch, and then in a leisurely way hopped to another, and so continued, circling the tree, but gradually mounting higher and higher by her spiral stairway until at last she reached the nest. In this casual way she was enabled to scan the neighborhood for enemies on all sides of the tree before coming to the nest.

In another nest I found three fluffy younglings nearly fledged. The westering sun threw its level rays between the dark-plumed branches, stirred by the sunset breeze, and lighted the pale azure crests of the nestlings with the glories of the sunset. What a birthplace this! and what a birthright—thus to be cradled in a cozy nest swung high in a noble pine, and there to be rocked by the winds of the world as they toss the branches to and fro; to open wondering eyes to the blue sky and the blazing sun; to know no roof but the arching dome of heaven, no shelter but the tender mother's wing; to receive food like manna from the skies; to wax strong, fit and eager, and then to spring forth upon the air full-winged and free—what a wonderful life is that of the "fowls of the air!"

The Blue Jay is a cleanly bird. It bathes frequently and keeps its glossy plumage in good order. On a hot summer day I saw from the window of my summer cottage, in a grove of tall pines, a Jay lying at full length in a patch of sunshine on the forest floor of fragrant pine leaves, its lovely wings and tail expanded, drying its plumage after a bath in a near-by spring. It was laying its "washing" out to dry. This may be a common habit



(Photograph by R. L. Coffin.)

DOWNY YOUNG FALCON'S IN AERY SURROUNDED BY THE FEATHERS OF THE BIRDS THAT HAVE BEEN KILLED FOR THEIR FOOD

among Blue Jays and Robins, but it is rarely observed and must be practised only in seclusion.

Jays are clannish creatures. They delight in company, noise and excitement. After the breeding season nothing seems to give them greater joy than to flock together and yell in chorus. I have often approached carefully such gatherings and have been unable to find any tangible cause for the excitement. But now and then they discover a drowsing owl, and then indeed there is an uproar, and "blue flashes to blue as they converge to the attack." From the uproar one might well expect a battle to the death. The entire mob seems to precipitate itself upon that devoted owl, as if determined to destroy it or die in the attempt. Screaming with rage and horror, they seem to shriek, "Thief! murderer! assassin! your hour has come"; but after half an hour or so the owl seems to be little worse for wear, and we begin to realize that the battle is mostly bluster. Hawks are attacked and insulted in much the same way, but the Sharp-shinned Hawk sometimes turns on his tormentors and lays one low, when the rest incontinently flee.

There is one Hawk, however, that the Jays let severely alone, and that is the American Peregrine Falcon or Duck Hawk. This swift and powerful Falcon is the Jay's worst enemy. It nests on mountain cliffs, and from the heights surveys the shining rivers and the valleys spread below.



(Photograph by E. H. Forbush.)

A YOUNG FALCON, HALF-FLEDGED, SEEMINGLY SURPRISED
AT THE SIGHT OF THE WORLD

Its piercing eye selects its prey, on which it falls like a thunderbolt. It is the master of the air within its wide domain.

Two men who were trimming apple trees in a valley saw a Blue Jay flying across a field and making for the woods. Suddenly a Falcon shot down from the mountain cliffs high above them, the air hissing from its half-closed steely wings. The Jay's assurance vanished in a breath. He stayed not to insult this enemy, but in mortal fear dived precipitately into a heap of apple-tree trimmings.

Quick as he was, the Hawk was swifter. As the Jay vanished into the brush, the clutching Falcon relieved him of his tail, snatching it out as the Hawk's downward course was changed barely in time to clear the heaped-up limbs. The two farmers were curious to know whether the Jay had escaped unscathed, so they walked over and beat up the brush heap. At first the Jay in his fear of the Hawk would not leave his place of refuge, but by



(Photograph by H. K. Job.)

THE FALCON AND YOUNG AT AERY, SECURELY HIDDEN
FROM THE WORLD

trampling on the pile they started him at last, and he flew silently and swiftly to the woods, as if the "devil was after him."

In the days of chivalry, when Hawks in falconry, "the sport of kings," were hooded and carried on the hand to the chase, no bird was nobler than the Peregrine, and today our so-called Duck Hawk is the swiftest bird of the forest. A friend tells this story to illustrate the power of its stroke: He was shooting one day on the banks of the Connecticut River when a large Merganser, or Shel-drake, flew past high over the water. A Duck Hawk suddenly shot out of the sky, struck the bird such a powerful blow as to throw it ashore, and sped away so quickly that my friend's shot failed to reach it. He picked up the dead Merganser and found a great part of its side torn out by the force of the blow or the clutch of those powerful claws. Those who know the hardiness of Mergansers and their tenacity of life will appreciate the power of that stroke. The Falcon's swiftness may be judged by the following:

When hunting on the Banana River, in Florida, a friend saw a flock of Blue-winged Teals flying over the water. The remarkably rapid flight of these Teals is well



(Photograph by E. H. Forbush.)

A YOUNG FALCON NEARLY FLEDGED, LOOKING WITH HOSTILITY ON THE WORLD

known to sportsmen. Suddenly from somewhere a Duck Hawk shot through that flock like a thunderbolt, struck down three—one after another—and, seeing the hunter, passed on, leaving the little ducks lying dead on the water.

The dexterity of this bird in the air may be indicated by the fact that they are able to catch Chimney Swifts, which are so swift and skillful on the wing that they are extremely difficult to take. They give the Falcon a game of tag. In trying to catch one of these little skimmers of the sky, he dives and twists as they keep the air and dodge his swoops, until at last one, not quite quick enough, is plucked out of the air by one of the Hawk's outstretched and quickly closing talons.

On May 20, 1917, I reached an aery of these Hawks. I worked down to it from the top of a precipice 500 feet above the river below. The single young one—the only one that hatched from the clutch of three eggs—was more than half grown and covered with white down. There was nothing that could be called a nest on this rock-shelf, but the nesting place was surrounded by small bushes growing from the scanty earth that had lodged there. Here the young bird sat and viewed the world from the shadow of the overhanging rock. He was surrounded by the feathers of many Blue Jays and some Orioles, Robins, Flickers, and other small birds which had been brought to him by his parents, and he called intermittently to his sharp-winged, powerful mother, sailing high overhead and screaming harshly. Soon the male joined her, and both dropped down at me with startling rush of wing and menacing cries. One of the birds dived straight

down from a distance of about 100 feet, directly overhead, and passed suddenly with a resounding rush of wings about ten feet away, bounding upward to its original height without any perceptible effort or motion of its pinions, which were held about half open. What tremendous power and spirit these birds evince! Later both of them hung high in air against a gale that rushed furiously over that mountain-top, and not a motion of a flight-feather could be detected. What held them, as if by sheer force of mighty will, against such a wind far above that rocky summit?

No bird can escape them in the air. Even the Carrier Pigeon is overtaken. When the Pigeon sees the Falcon he rises upward to a tremendous height, but eventually the Hawk gets above him, and then, shooting down, strikes him to the earth. Occasionally the Hawk misses or takes off only a few feathers, but he perseveres, and in the end almost always overtakes his prey.

On the mountain-side, at the foot of the cliff, on the talus where the rock has weathered away and earth has been formed through the ages, the forest growth stands, reaching upward along the rocks. All along the foot of this cliff are scattered feathers of birds which the Falcons have killed. Those of Pheasants, Pigeons, Night Hawks, Blue Jays, Bluebirds, Orioles, Flickers,



(Photograph by E. H. Forbush.)

YOUNG FALCON JUST BEFORE HE LAUNCHED INTO THE AIR FOR HIS INITIAL FLIGHT, RIDING IN A MOMENT THE UNSTABLE SHIFTING ELEMENT THAT MAN AFTER CENTURIES OF FAILURE HAS ONLY BEGUN TO CONQUER

Phoebes, Kingbirds, Robins, and the wings of other small birds show the destructiveness of these Hawks.

On June 10 I visited the aery again. Lowering clouds drifted about the mountain-top in sheets of white mist, now hiding the valley below, now unveiling the lovely landscape. The woods were wonderfully beautiful; the leaves fully developed, and the miracle of spring and summer was consummated. Some leaves that were tiny leaflets only ten days before have now reached their full span; but no one knows how they developed and no one watched them grow. The young Falcon that a few weeks before was a little downy white chick was now a hawklet, nearly full grown, dark as the parents, with wings and tail ready for flight and only a few downy filaments of his chickhood plumage remaining. On June 11 he launched boldly out over the gulf on strong and perfect pinions, riding in a moment the unstable, shifting element that man, after centuries of failure, has only just begun to conquer.

The Duck Hawk is a destructive bird. It slays songbirds, game-birds, waterfowl, and domestic pigeons; hence it is proscribed and every man's hand is against it. But this bird of the crag and the sky is now so rare in New England that we cannot afford to countenance its extermination. I know of only a few pairs nesting within the boundaries of Massachusetts. It is one of the living links that connect our times with the days of the forefathers and the untrodden wilderness. This bold, fierce bird now enters even some of our cities. It breeds on the Palisades of the Hudson near New York City. It alights and roosts on the tall Custom-house tower in Boston. Not long ago a sailing vessel was crossing the Atlantic, and while she was still far from land a pair of these

Falcons sailed down from the sky, alighted on her upper spars, perched on a furled sail for the night, and then set out boldly the next morning for the continent of North America. Let us hope that they reached it in safety. I would rather see one of these Falcons breasting a raging gale far above the mountain-top than watch the maneuvering of a thousand domestic doves. What flight so grand as that of the fierce Hawk riding upon the gale! What rush so swift and powerful as its daring plunge in pursuit of its fleeing prey!

I believe with Thoreau that we should not exterminate the deer to replace it with the hog, nor the hawk to make way for the barnyard fowl.

As I sit here in my village home writing the last few lines, the sun sets in glory and its glow fades slowly out of the western sky. As the light over my table is turned on, a tremulous wail comes in at the open window, and there sits a little gray owl on a limb of the wayside maple, regarding the illumination with wondering eyes. Again the owl sends forth its mournful cry, and, spreading its noiseless pinions, sails away. How the visit of this little night bird stirs the blood and breaks up the monotony of the winter day. Whence came it, and how far? Like the breath of a forest wind, it has come and gone into the gloaming, but its coming has made the day memorable. The time may come when to many it will be a priceless boon to hear an owl on the bough, to see a deer in the woods, a duck on the river, an eagle or a hawk in the sky. Let us protect the eagle that soars on high, the little owl in the village street, and the falcon on its mountain cliff, for their days of safety in the isolation of the untraveled wilderness are past and gone.

The Land Beyond Kona

[Continued from Page 95]

FORESTS THE MOUNTAIN PEOPLE'S BEST FRIEND

Building a new and better agriculture on the one they now have, the hill farmers must first of all take thought of their woodlands. There must be an end to the destruction of the forests. Instead, they must be made steady sources of income and be worked largely by the men who live about them in the seasons when farm work is least urgent. The farmer profits for the time being when a company comes in, cuts over a few thousand acres of land, builds towns and railroads, employs every available man at good wages. He profits, whether he goes to work in the mills or whether he raises products to supply the new demand for it at a high price. But when the tract is cut over, the mill moved, the tracks torn up, the houses dismantled, he is back where he was at first and his country is much poorer in natural resources. With a smaller mill as a fixture and a steady demand for his timber, or for his labor in the woods when he is not busy with his crops, the forests would be an asset he could count on for all time.

Another step toward this better farming system must be the development of the orchard industry. This is one of the finest of fruit countries. Even now many apples are shipped out of the county almost every year. They are grown in old orchards that are little cared for, hauled to the depot in wagon beds, dumped into box cars with other apples of all kinds, and necessarily sold for a very low price.

With the development of fruit-growing will naturally come more attention to potatoes, cabbage, and other truck crops to which this section is admirably adapted; also the development of by-product industries—canning, cider-making, dairying, and so on. These things can increase acre production many-fold over the growing of the staple field crops.

Once the deplorable and criminal waste of its greatest natural resource is stopped and the forests fitted into their rightful place in the life of the section, this mountain country should come into its own as one of the most prosperous and progressive of farming regions.

The Mystery of a Buried Forest

By JOHN B. CUNO

THE discovery of an alleged prehistoric forest of cypress stumps in the heart of the National Capital has recently stirred the press of the country. In excavating for the foundation of the Hotel Walker, at Connecticut Avenue and De Sales Street, Washington, D. C., the buried forest was uncovered bit by bit.

A group of geologists of the United States Geological Survey, after an examination of the workings, stand as authority for the stories which have been appearing in newspapers and magazines, to the effect that almost in the shadows of the White House is the remains of a

contains the stumps in an upright position, is evidence that the forest remains cannot be less than 20,000 to 30,000 years old. So far as the writer is aware, the existence of this sandy clay layer covering the entire excavation is not definitely established.

THE SHADES OF "BOSS" SHEPHERD

Furthermore, the clay material discovered above the stump layer may very readily have been dumped there in the days of the energetic "Boss" Shpherd, an early governor of the District, when he pushed vigorously the filling in of swamp areas within the District, cut roads, and leveled off hills. The geologists admit that this same material outcrops in other sections of the District.

All agree that the area covered by the immense excavation was a swamp, and that a stream whose source was Mount Pleasant, a suburb of the city, flowed through the very point where the excavation was made. That an artificial fill was made at that spot is granted, but there is disagreement as to the depth of the fill. "Boss" Shepherd, in the seventies, built a causeway on Connecticut Avenue which in itself was ten to twelve feet above the surrounding country, and at the point of the excavation there was an old dumping ground which had been used for years. The dumping ground itself was of considerable depth.

Neither groups have had the time to examine into the early engineering records of the city to ascertain for sure just what was the depth of the fill, but the writer has personally measured it and found it to be from sixteen to eighteen feet throughout the excavation. This is the depth at which the layer of muck that contains the stumps was found. The geologists claim that the artificial fill was from two to twelve feet in depth. The fill in no case was as little as two feet, and in nearly every part of the perimeter of the excavation one can still plainly see that the fill extends below twelve feet.

WHO STOLE THE TRUNKS?

One of the most peculiar things about the discovery is that trunks of the trees, either as remnants of trees standing or as remnants of trees falling, were not found. There were found well preserved an abundance of large branches, twigs, leaves, seeds, fruit scales, bark, and other plant debris. The geologists claim the trunks rotted away while standing. This is highly improbable, because decay would have taken place at the point where the water or mud or quicksand met the trunks, and the trunks would then have fallen, become submerged, and been preserved as well as the stumps and branches. It seems more likely that the trees were felled by the early settlers and were removed for use in building construction in the District of Columbia or in neighboring places, such as Annapolis, Maryland. It might be interesting to know



THE STEAM SHOVEL DISCOVERS ONE OF THE ALLEGED ANCIENT CYPRESS STUMPS IN THE EXCAVATION AREA, THE AGE AND ORIGIN OF WHICH ARE IN DISPUTE

forest dating back thirty thousand and perhaps one hundred thousand years. The public seems to have accepted the geologists' theory.

This article aims to present for the first time the viewpoint of the forester and the man familiar with wood and cypress forests, whose theory is that the stumps are not prehistoric, but were left when the early settlers of the District cut over the area surrounding the excavation.

The geologists claim that a layer of light gray sandy clay above the layer of muck, six to ten feet thick which

that one of the steam-shovel men presented a bullet which he claimed he had found at the base of one of the stumps.

The United States Forest Service identified the wood as cypress wood, while members of the Smithsonian Institution identified the seeds, the fruit scales, and the leaves to be the same as the present-day bald cypress, *Taxodium distichum*. Bald cypress is found growing naturally down the Potomac River at Marshall Hall, about twenty miles from Washington. Cypress, as we know, has the tendency to follow streams, and as the filled-in stream was joined to the Potomac, it seems that cypress may very readily have grown along it. It is highly improbable, however, that in 30,000 years the tree would have the exact characteristics of the group from which it arose. It is more likely that the cypress would have changed some in that period of time.

THE SAME OLD CYPRESS

The wood itself is exactly the same as present-day cypress, except that it is lighter when dry and somewhat grayer in color. The difference in weight may be due in a large measure to the leaching out of resins and other chemicals—a process which would not take many years. On the other hand, no organic or silicious matter has infiltrated the cell cavities—a thing which would very likely have happened to some extent had the wood been buried for 30,000 years. It must be borne in mind that 30,000 years is a very conservative estimate. Certain of the geologists admitted that this first estimate of one of their colleagues was far too conservative and that the trees grew more likely 100,000 years ago. It is interesting to note that cypress shingles were shipped from Bladensburg, Maryland, a town five miles northeast of Washington, around one hundred years ago.

Most of the news articles concerning the size of these stumps claim that they were from 9 to 14 and in some cases 25 feet in diameter. These sizes are erroneous. The writer has kept in touch with the excavation from the time the work was started and has never seen a stump more than five feet in diameter immediately above the usual root swelling. Possibly some of the measurements were taken across root swellings.

The argument is by no means ended. The geologists have reviewed the case only from the standpoint of a study of the soil strata. It is hoped that further investigation may be made from the viewpoint of the forester. Perhaps an extended search into the engineering records of the city will settle the question definitely.

An Essay on Frogs

The Chicago Board of Education has caused a classic essay to be immortalized in type. It is about frogs and was written by a young Norwegian. The essay: "What a wonderful bird the frog are! when he stand he sit, almost. When he hop he fly, almost. He ain't got no sense, hardly. He ain't got no tail, hardly, either. When he sit he sit on what he ain't got, almost."

America's Transition from Old Forests to New

[Continued from Page 71]

fire does not alter this view, for is not wanton destruction without profit a tolerable manner of sport, as it were, being without the sordidness of any compensating end?

There is nothing surprising in all this. It is not wholly wrong or half wrong. The trouble is that it is only half right. That we love the forest for its own sake—that stumps and blackened wreck-strewn areas inspire a fighting feeling—shows a good heart and is potent for good. But the impulse of the heart needs guidance by the head, instead of by the persecution complex seeking a scapegoat for the sins of all of us. It needs the intellectual honesty to perceive that all are to blame as much as any, and that none is as much to blame for things as they have been and are as for not making more effort to improve them.

THE CYCLE OF PUBLIC OPINION

For the essence of the American forestry problem is that every forested country proceeds through well-defined stages of economic development, during each of which certain things are or are not possible, and that the measure of public intelligence is not the deploring of the past, but the capacity to recognize the arrival of changed conditions and make the desirable adjustments to fit them with the least past-engendered prejudice and conflict. We have, on the other hand, been inclined too much to throw stones at retreating shadows, with our own backs to the sun. These stages of development are worth studying, however, if the purpose is to utilize the knowledge constructively. They are almost always, in all countries, broadly divisible into three:

The wholly inconsiderate exploitation period from which we have emerged.

The period, which we have entered, of alarm, conservation, and experimenting tentatively with actual reconstruction methods.

The final settling down, which we have not attained, but is inevitable, into such fairly adequate forest production as comparative land values warrant, with the burden and benefit divided by sound economic law between public and private agencies according to their facilities and needs. And further influencing the nature of the task will be much readjustment of forest use, as distinct from production, so a lesser volume of wood will go further through better manufacture and fabrication and the utilization of what are now lost by-products.

EDITOR'S NOTE.—This is the first instalment of Mr. Allen's article, which will be published in four numbers of AMERICAN FORESTRY. The second instalment will appear in an early issue.



THE MAGNIFICENT LOMBARD ELM AT LOMBARD COLLEGE, GALESBURG, ILLINOIS. THIS TREE, SET OUT IN 1868, IS THE SECOND LARGEST ELM TREE IN AMERICA, WITH A SPREAD OF ONE HUNDRED AND TWENTY-EIGHT FEET AND FIVE INCHES



THIS IS SACRAMENTO'S MEMORIAL GROVE IN CAPITOL PARK, SACRAMENTO, CALIFORNIA—UNIQUE IN THAT TREES HAVE BEEN TRANSPLANTED THERE FROM PROMINENT BATTLEFIELDS OF THE CIVIL WAR, TREES COLLECTED BY CALIFORNIA WOMEN OF THE G. A. R. (See page 110.)

Massachusetts State Forest From An Old Estate

By A. H. SCOTT

THE recent acquirement as a State forest of the famous Whitney estate in the Berkshire Hills, by Massachusetts, is a fitting tribute to the efforts of the Massachusetts Forestry Association, which celebrated last month its 25th anniversary. The Association, together with the State Conservation Association and a number of other State organizations, have campaigned vigorously and untiringly for the extension of State forests. Due to those activities, Massachusetts is now having a forestry awakening, which has already resulted in the addition of over 12,000 acres to the State-owned forests. Up to the time the deeds were conveyed, the area of State forests amounted to only 33,456 acres. Of this small acreage over 20,000 acres were located in the extreme

Neighboring property was gradually acquired, along with other plots of mountain land, at a cost of sometimes as little as \$4.00 per acre. Between 1892 and 1897 approximately 14,000 acres, comprising nearly the whole broad table-land at the top of the mountain, was bought up and consolidated into a single holding. A large chalet, stable, water-tower, and numerous outbuildings were erected, and for about four years the place took on some of the atmosphere of an ancestral English estate. Of the numerous farm-houses acquired with the various properties, some were torn down and some were remodeled to serve as game-keepers' lodges or house the help who carried on the necessary work of upkeep and development.

Mr. Whitney made extensive plans for the development of the property, started scientific farming on a huge scale, and turned a large acreage of the pasture and timberland into a game preserve. A high, tight, wire fence was erected around a section of nearly 8,000 acres, into which were turned 45 American bison, 140 elk, 12 antelope, two pairs of moose, and twenty deer. Bridle paths were cut through the most picturesque sections of the estate, which have for years since the place was abandoned guided anglers, berry pickers, and skii runners through the otherwise unblasted forest fastness. Due to its inaccessibility in the days before automobiles would climb



THE WHITNEY CHALET

The old house is gray and weatherbeaten after twenty years' disuse, and the State plans to dismantle the building.

western county of Berkshire, which borders on New York State, and where interest and appreciation of wooded lands is keenest. It is within the borders of this country that the latest acquisition to the State forests is located.

Massachusetts is one of the smallest States in the Union, having an area of but 8,315 square miles, or approximately 5,322,000 acres, while the population is well over four millions. For such a populous Commonwealth the State has a surprisingly large acreage suitable only for the growing of trees, estimated by the State Forester at 2,672,950 acres, of which 700,000 acres constitute, in their present condition, practically worthless cut-over and burnt lands.

For the past twenty-five years the tract has been known as the Whitney estate and was the property of the late William C. Whitney, of New York, father of the present Harry Payne Whitney. It was previous to 1893 that Mr. Whitney bought a small parcel of land as the result of a horseback ride to the top of what is known as October Mountain in the town of Washington.



THE FOREST IS WELL POSTED FOR FIRE

The thoughtless hiker and camper is reminded that he should be careful of fire on his own property.

hills, the Whitneys soon lost interest in the project and spent but three summers at their mountain home. The estate was carried on for several more years, but in 1904, shortly before his death, Mr. Whitney disposed of all the farming and dairy machinery and live stock, boarded up the buildings, and left the place in charge of a single caretaker. The buffalo herd was turned over to the Bronx Park Zoo in New York City, while the elk were shipped to the Adirondacks and turned loose. The antelope had died, being unable to stand the severe winter weather at the high altitude. The four moose, however, together with several of their progeny and all the deer, had escaped during the previous winter. Two of the original four are now roaming the hills and they with their descendents make up a herd of twenty-four, according to the count of district game wardens who are in close touch with the wild life of the mountain. Two of the moose have been shot by hunters during the deer hunting season, one in 1920 and another in 1921. The penalty for killing a moose in Massachusetts at any time is a fine of \$100.00, but the perpetrators of the act have never been apprehended. The liberated moose now spend most of their time not far from their original haunts and may occasionally be seen by the more venturesome feeding on lily pads in an almost inaccessible swamp on the estate. Numerous deer continue to live on the mountain, but the annual open season has prevented any marked increase in their numbers. Hunting has always been prohibited on the tract, but, as it is unfenced, the animals have wandered into unposted territory and fallen victims to hunters' bullets.

The Whitney Realty Company, of New York City, headed by Harry Payne Whitney, has had the estate on the market for several years and held the property at \$100,000. When the agitation was started about a year ago for State purchase in order to head off acquisition by lumber interests, the price was reduced to \$75,000 and finally to \$60,000. The State had available but \$50,000 for the purpose, and the balance was made up by public-spirited men of western Massachusetts who had been instrumental in arousing interest in the public mind of the desirability of making the territory a State forest. Along with the \$10,000 donation the State also received as a gift a valuable tract of 1,000 acres of standing timber which adjoins the Whitney land and which was part of a large estate in the town of Lenox, the famous summering place of some of New York's wealthy families.

In 1912 the city of Pittsfield took by right of eminent domain a portion of the property, amounting to about 2,000 acres, for the purpose of insuring a permanent water supply and built a large reservoir and dam. The reforestation pol-



BEAUTY SPOTS ON THE STATE FOREST

Two Upper—Lake Ashley, Pittsfield's main water-supply reservoir, bordering on the new Massachusetts State forest, and a bit of the broad table-land at the top of October Mountain, on which lies the main part of the forest.

Two Lower—The forestation policy established by the city of Pittsfield when it took a portion of the estate in 1912 to protect its water supply will be supplemented by new plantings to be made by the State. Nursery of 309,000 two-year-old Norway spruce transplants which was established on the mountain in the spring of 1922.

icy established at that time by the city is now to be supplemented by a similar policy of the State, the forestry department having already mapped out a tentative thinning and planting program for its new property. A nursery containing 309,000 two-year-old Norway spruce transplants has been established in what was formerly a meadow near the main farm building. These will remain undisturbed for at least two years or until the State Forester has had an opportunity to make a more thorough study of the needs of the new forest and determined how they can be most effectively distributed. At present the output of the State white-pine nurseries is considerably behind the

phrases, which call attention to the fact that the reader is on his own property and suggesting that he be governed accordingly.

The old road up the mountain is now being made passable for automobiles and it will not be long before a new and previously inaccessible section of the famous Berkshire Hills will be opened for the enjoyment of all who appreciate nature in her primeval beauty.

Sacramento's Memorial Grove

ONE of the most unique memorial plantings in the United States is the Memorial Grove in Capitol Park, Sacramento, California, some of the trees in which have been transplanted from battlefields of the Civil War. This grove is located in about the center of the Capitol grounds and occupies half an acre, and here the city's annual memorial exercises are held. This interesting collection of trees and shrubs was planted and dedicated to the State of California by the ladies of the G. A. R. They are all historic trees collected from Vicksburg, Gettysburg, Missionary Ridge, Antietam, and other prominent battlefields of the Civil War. Included in the varieties are black walnut, shell-bark hickory, ash, water oak, willow oak, black-jack oak, silver maple, red maple, rock maple, tulip, basswood, mulberry, juniper, locust, white elm, slippery elm, and dogwood. There are also trees transplanted from the birthplace of President McKinley and from the plot of ground surrounding Garfield's tomb.

California is well organized to take care of her roadside planting needs also, for at the State nursery, near Sacramento, thousands of trees are propagated and made available for roadside and memorial planting by the different counties. The State stands the cost of this propagation and the various counties meet planting costs. Up to the present time about 600 miles of highway have been planted with stock from the nursery, which has been in operation for only little more than a year.



THE "MOOSE FENCE" SURROUNDING THE GAME SANCTUARY

This is still intact for some miles of its length, but moose and deer roam at will over the whole property, on which hunting has never been permitted.

demand for transplants, having distributed nearly 1,000,000 trees this season, but it is expected that the spring of 1923 will see a sufficient surplus built up to establish a large pine nursery on the mountain. A section of approximately 500 acres at the very top of the mountain is at present nearly bare of trees, having in former years constituted the farm proper on which the crops for the support of the live stock were grown. A portion of this open land will be replanted as soon as the trees are available, but a large section of it will be set aside for the use of campers who are to be allowed on the reservation. In making this provision the tract will assume to a certain extent the status of a State park, where any one may camp as long as he observes the specified precautions in regard to fires and disposal of refuse, etc. Numerous signs have been placed in conspicuous places, bearing pertinent

The Briefest Forest Fire Creed Ever Written

The foreword to the Pennsylvania forest fire manual was written by Gifford Pinchot, and it is so abruptly brief that any introductory comment would exceed in length the text itself. Here it is:

"The Forest is Your Friend.

"The water you drink comes from it.

"Nothing you use or wear could be yours without the forest's help.

"The State forests are your playground.

"They are wide open for you to fish, hunt, and camp.

"Our forests are almost gone.

"They will grow if fires are kept out.

"The Forest Fire is Your Enemy."

American Forestry Sustains a Double Loss

Henry C. Campbell and Jesse M. Overton, Vice-Presidents of the American Forestry Association and Prominent Leaders in Forestry, Claimed by Death

In the death of Henry C. Campbell, assistant editor of the *Milwaukee Journal* and a vice-president of the American Forestry Association, the forests of the United States, and particularly those of his native State of Wisconsin, have lost a devoted friend and a powerful ally. Mr. Campbell's death occurred on January 2 as a result of a cold which developed into bronchial pneumonia.

No man in the field of journalism in recent years labored more devotedly and untiringly than Mr. Campbell for the perpetuation and upbuilding of American forests. Throughout Wisconsin he was known as the champion of Wisconsin forests and for a number of years he has been an outstanding figure in the national movement to bring to the forest cause its rightful recognition. Few, if any, newspaper men excelled him in his broad grasp of the forest problem and none excelled him in the vigor and persistency with which he wielded his pen in behalf of public forest interests.

Mr. Campbell loved the forests deeply, not merely because they are beautiful and inspiring but because of the diversified service which they render mankind. He worked for years to preserve them from wanton destruction. Every week his paper carried a message of forest news in the form of a press sheet to every newspaper in the State of Wisconsin.

As chairman of the Wisconsin Forestry Association he fought to lessen the constant menace of forest fires in the north country. He was untiring in his efforts to hasten

reforestation on the millions of acres of barren cut-over lands in the Lake States and to win back to his native State the lost glory of forest dominance and comfort. Mr. Campbell recognized the need of State forests for the

preservation and development of recreation in the Lake States and he fought untiringly for a State policy which would guarantee to the people of his own and neighboring States natural forests and the right of access to the thousands of lakes in the north country.

Despite the many discouraging aspects of our forest problem, Mr. Campbell was always an optimist, and with a newspaper man's faculty of reading the public pulse in advance, he foresaw the awakening of the present public appreciation of America's needs for forests. "The chief foe of forestry is ignorance," he declared. "Hardly anybody is opposed to forestry. Progress is retarded not by direct opposition but by the indifference of the many who do not know and who do not understand."

To the tearing down of that wall of public ignorance, Mr. Campbell devoted a large part of his personal and business hours, and, in years to come, to him must be given the credit for having be-

queathed to his native State the broad and lasting groundwork of public enlightenment, upon which Wisconsin's future forests will rest.

His death is a double loss to the American Forestry Association in that he was not only a vice-president, but in the election of new officers just closed he was elected a member of the board of directors.



MR. HENRY C. CAMPBELL

Late Vice-President of the American Forestry Association and Assistant Editor of the *Milwaukee Journal*.

JESSE M. OVERTON

The South, and Tennessee in particular, has lost a valued and beloved citizen, an earnest supporter of forestry, in the death of Mr. Jesse M. Overton, a vice-president of the American Forestry Association and president of the Tennessee Forestry Association, who was suddenly killed in an automobile accident in Nashville, December 16, 1922. No man in the South was more widely known and respected in business circles. First of all, he was a man of rectitude, high ideals, few words,

lands was one of his ideals; wild life, game, fish, water supply were to him invaluable products of the forest which come of its right and proper management.

He was interested in the Southern Forestry Congress and was one of the leaders in organizing the Tennessee Forestry Association, of which he was president from its creation in 1917. He was a prime leader in establishing the Bureau of State Forestry in Tennessee, and gave it his support in engendering a sentiment throughout the State against forest fires.

At the time of Mr. Overton's death he was setting a splendid example by practicing conservation through the utilization of timber from his own holdings; and he took great pains to arouse among the citizens of that neighborhood a like interest in conservation, realizing the value of their understanding the facts about forest protection.

Much of his extensive interests were in the mountain resources—in coal, iron, and timber. He loved the mountain people and their rugged country, and labored for the development of both.



MR. JESSE M. OVERTON

Late Vice-President of the American Forestry Association and President of the Tennessee Forestry Association.

who did worth-while things with no flare of trumpets. He was a conservationist, not a mere collector of forest wealth. The development of the State's mineral resources and the unhampered productive capacity of wood-

Trees of God

Ye trees of God, who rear your head
To mark our noble soldier dead,
Are sentinels who watch alone
To guard each well-beloved one.

Ye lift green branches high in air,
As if in silent, wordless prayer
For those who have life's battles won
In noble duty, nobly done.

The everlasting symbol, ye,
Of life unending, radiant, free!
For no more steadfast is the sun
Than was each well-beloved one.

"Gone west!" "Lights out!" Three volleys!
Taps!
The flag half masted! Shadow shapes
Forever marching—"Column right!"
To glories hid from mortal sight.

But never shall their memory fade.
Beneath such trees' green pungent shade
A grateful nation bows its head,
And worships with its soldier dead.

—By Lilian Bell.

The Index for AMERICAN FORESTRY for the year 1922, Vol. 28, is now available. Members desiring copies may have them by applying for them at the Association's Headquarters, 914 Fourteenth Street Northwest, Washington, D. C.



EDITORIAL



OPPORTUNITY

ALL normal men and women love trees. All normal boys and girls love the woods. Upward of fifty million Americans make first-hand use of the forest every year for the gaining of livelihood, for recreation, for the propagation of wild life, for the warming of hearths, for the beautifying of homes, streets, or cities, for the memory of departed ones, or for other reasons that are close to the heart.

Those fifty million Americans want forests. They want them in sufficient abundance to meet their material and spiritual needs. They, with all their diversity of interests and all their intensity of feelings, possess a strength which once aroused and unified would be irresistible in the congress of public opinion.

The strength of the forest cause in America is its diversity of human interests. Its weakness is that same diversity of human interests *unorganized*.

There lies the great, the all-inclusive, opportunity of an American Forestry Association. To carry to those fifty million Americans the clear message of the forest cause, to enlist them under a common banner of sound, progressive forest policies for State and nation, to vitalize them with the spirit of action, is a task and a mission which can be successfully accomplished only by an organization of national scope.

The need for a strong, a dominant, a temperate na-

tional organization, which can touch the responsive chords of those fifty million men and women and serve them as a medium for the expression of their opinions, was never greater than it is today. And the opportunity for welding a tremendous country-wide sentiment—now so largely inexpressive—for forest protection and forest renewal was never so favorable as it is at the present time. Public sentiment for forests is in its first great awakening. It is feeling for the light. It is in a receptive mood. The call for a great national campaign of forest education with some definite leadership is most urgent.

The day is at hand when all forest-loving people should band together their efforts for the upbuilding of a stronger national association, which can represent them and their cause nationally in a fearless, aggressive and yet righteous way, and which can measure up to all opportunities. An organization of this character is the great need of the forest movement today. Its accomplishment would be the greatest step forward at this time, excepting the attainment of an all-inclusive forest policy for the nation. But this last, let us bear in mind, must be gained step by step, over one obstacle after another, while the upbuilding of a stronger association is an open, inviting field, offering the most promising and the most effective means for the ultimate accomplishment of needed forest policies and practices in America.

TREES AND TREES

FROM inquiries coming to the Editor, there appears to be some confusion in the minds of many readers of AMERICAN FORESTRY as to the present interest and activities of the Association in relation to such allied subjects as memorial trees, roadside planting of trees, shade trees for homes and municipalities, city forests and parks, trees for the "Hall of Fame," etc. An impression prevails in some quarters that with the recent change of officers the Association's policy in respect to these subjects has likewise changed.

Such an impression is unwarranted. The American Forestry Association is just as interested as ever in these subjects, and it will continue to encourage the protection and propagation of trees for all purposes which will make this a better and more beautiful country in which to live. The AMERICAN FORESTRY magazine will continue to present these subjects in its pages and to give them their just places in the great cause of perpetuating America's forest trees. To this end its interest in what is needed and what is being done in these allied fields is no less keen than formerly.

The only change in policy which the Association has made in respect to these subjects is one of a fiscal character. When the former President of the Association, Mr. Pack, resigned a few months ago, to organize the American Tree Association, he asked that he be permitted to carry on, in the name of that association, the special publicity which he had been conducting as President of the American Forestry Association with funds not a part of the regular Association.

In response to that request, the interim committee of the American Forestry Association, in a letter to Mr. Ridsdale, dated October 21, wrote:

"The committee has decided that the financial situation of the Association does not justify the expenditure of any of its funds for special printing in connection with the planting of memorial trees or trees bordering 'Roads of Remembrance.' The committee has no objection to having the special advertising of these subjects and the special printing done in connection therewith, which has hitherto been carried on under the auspices of the American Forestry Association, undertaken by Mr. Charles L.

Pack or under the auspices of the new magazine with which you are to be connected. The same decision covers the 'Hall of Fame' for trees, as far as special printing or other forms of special publicity are concerned."

It will be clear that the policy enunciated in this letter refers only to special forms of publicity outside those already provided by the American Forestry Magazine and the regular channels of the Association.

DISMEMBERMENT OF THE FOREST SERVICE UNLIKELY

THE announcement that Secretary Fall will on March 4 retire from the Cabinet is one to make all friends of forestry breathe easier. Apparently the plan to disrupt the Forest Service by transferring to the Department of the Interior administration of the National Forests in their entirety is dead. Of that plan Secretary Fall has been a vigorous advocate. While the reason given for his impending resignation is the pressure of personal affairs, unofficial surmise regards his retirement as due in part at least to the President's decision not to support the transfer.

Public opinion has played the chief part in defeating Secretary Fall's desires. At the outset no one could have foreseen that this would be the case. One of the measures to which President Harding was committed when he took office, and one which he has evidently regarded as of large importance, was the reorganization of the departments. At first public opinion was either favorable to reorganization or not greatly concerned.

In the early fall of 1921, however, it began to appear that one feature of the Administration's plan of reorganization (though the plan in general and in detail was still tentative and undisclosed) threatened disruption of the Forest Service. The October, 1921, issue of AMERICAN FORESTRY called attention to the menace that this involved to the cause of forestry. The response of public opinion was astonishing. As the months passed, it became more and more evident that the people of the United States were deeply aroused.

The opposition of AMERICAN FORESTRY to the transfer of National Forest administration, in whole or in part, to the Interior Department was based not on the question of the relative fitness of the heads of the two departments, Interior and Agriculture, to direct the National Forest policy, but wholly on questions of principle. It was urged that the Forest Service could not be broken up without serious public consequences, and also that if placed in the Interior Department the National Forests would be in charge of a Department in which they do not belong and could not function as in the past. But Secretary Fall himself, in his published utterances, did much, we believe, to make clear that his personal views were pronouncedly antagonistic to the basic principles of conservation, and that if he should obtain the power, which he was apparently eager to secure, disastrous changes would follow.

This was both fortunate and unfortunate. Secretary Fall, in our judgment, has done more than any other man to make the transfer at the present time impracticable. Had he commanded greater public support, or been less indiscreet, it is not impossible that the plan might have gone through. It is still not impossible that, now or later, on the initiative of Congress or with Executive recommendation, transfer to the Interior Department of at least the Alaskan forests, or of some of the present functions of the Forest Service, may be proposed. Essentially, the questions involved are questions of principle, not personalities. Friends of the forests must still be vigilant.

BEARS AND TREES

FOR some years past one of the classic examples of Federal administration in Alaska has been the brown and black bear story, now happily adjusted by centralization, in one single Government agency, of all duties of bear protection in Alaska. The story, while it lasted, afforded great gratification to all proponents of the reorganization idea, who dilated upon the absurdity of such a situation in the face of the fact that all bears were brothers under the skin, and in many cases were real brothers, differing only in the coloration of their skins. Why was it necessary that one Department should function as the guardian of brown bears and another Department should guide the destinies of black bear? There was not any convincing answer, except that the condition had been the outgrowth of other changes, quickly corrected as soon as it became evident.

There is an affiliation between bears and trees, as many bear hunters are aware. There is also an analogy between bears and trees in the consideration of questions of

proper allocation of Federal functions and responsibilities. If the brown and black bear situation justifies unrestrained humor and scathing criticism, should not a similar situation in respect to public forests provoke even greater merriment and more heated denunciation? Let us look this situation in the face—and smile!

Congress, by the act of February 1, 1905, created the Forest Service, charged it with the duty of promoting sound principles of forest management for the nation, and made it custodian of the National Forests. The Service has grown with its responsibilities, and there is today but little criticism of the way in which it serves the nation. Its ability to manage and conserve the forest properties of the nation has been so convincingly demonstrated that it is now rarely questioned. Every consideration of efficiency and economy justifies the assumption that the management of all Government owned or controlled forest lands should be vested in the Forest Service.

There are, however, some brown, gray, and even blue

bears outside the National Forests. For example, there are about four million acres of timbered Government land, unreserved and unappropriated, under the jurisdiction of the General Land Office, because various persons opposed its inclusion within National Forests. It is good forest land, the same kind the Government has otherwise reserved, some of it as good as the kind the Government is buying for National Forest purposes under the Weeks law. In its present status it can be logged only under amicable trespass proceedings, and protected from fire only after the fire emergency has reached its height.

Then there are the military reservations, which contain several hundred thousand acres of actual or potential forest land, used infrequently for maneuver purposes and controlled by military men, willing enough to develop the forest resources, but lacking the knowledge and the financial authority to do so. For the third count are a million and one-half acres of timber land revested in the Government by the forfeiture of the Oregon and California Railroad land grant, which is under the control of the General Land Office, with very inadequate provision for its protection and administration.

Finally, within the Indian Reservations are over five

million acres of heavily timbered and valuable land, entirely unallotted to the Indians. These lands constitute in part the sources of future timber supply. They embrace in part watersheds upon which navigation, water power, irrigation, and farming interests are so vitally dependent that any impairment of their forest cover would inevitably cause irreparable damage to citizens, municipalities, and States—damages far transcending the immediate land and timber values involved. For the most part they lie within adjoining, or close to established National Forests, so that their administration as National Forests would be the most economical way.

To give even partial and not very effective protection and management to each of these classes of land, substantially separate and distinct forest organizations, each functioning entirely separate and apart from other forest organizations but all with practically identical purposes and obligations, have been created. Does not this out-bear the bear story? The required treatment is the same as that used in the bear case: Put the entire job under one single qualified agency, which obviously is the Forest Service, thus eliminating duplication and waste of public effort and money.

LINVILLE GORGE AND GRANDFATHER MOUNTAIN

IN nearly every State there are forest lands which will serve for public recreation and which can be opened for camping under permit, perhaps employed in part as breeding places for game animals, and still be held for their major use, the production of timber. Several States, notably New York, Pennsylvania, New Jersey, and now Massachusetts, have set fine examples in this respect. New York, in the Catskill and Adirondack reserves and in the Allegheny State Park and Palisades Interstate Park, has more than two million acres of wild lands held for the enjoyment of the people, though the reserves have been acquired primarily as sources of timber. Pennsylvania has more than a million acres, and that State is now preparing to vote an expenditure of \$25,000,000 to increase this area of public forests and parks to not less than 5,000,000 acres.

It is high time for the Southern States to awaken to the recreational values of their forest country. The southern Appalachian Mountains, for example, contain some of the scenic gems of the eastern United States. But the Southern States are doing practically nothing to set apart their choicest areas of wooded and mountainous lands, and thus give them a justly recognized place in the sun of America's natural wonders. The State of North Carolina, it is true, has made a beginning by acquiring the Mount Mitchell State Park, to which this issue of AMERICAN FORESTRY gives considerable space. But the State has other natural assets of equal or greater scenic value, which it should preserve, before it is too

late, against the destructive menace of commercialized greed.

It is the opinion of Mr. W. W. Ashe, who has examined the entire Appalachian region from southwestern New York State to Alabama, that of the half dozen areas having that elemental charm which adapts them for natural parks, two of them, lying very close together, are in North Carolina. One is Linville Gorge; the other is Grandfather Mountain, some 20 miles to the northward, its rock-capped Alpine summit encircled with forests of spruce and balsam. These two areas, in his opinion, are the scenic gems of the Appalachians.

Linville Gorge is the most scenic area of large size in the State, if not in the entire Appalachian region. Two of the peaks on the long mountain which walls in the gorge on the east have peculiar and characteristic shapes, from which come their names, Table Rock and Hawksbill. On account of their distinctive forms, they are recognizable at great distances. These peaks should be included in a State park, as they are integral parts of the gorge region, which has been described as a fragment of the Grand Canyon. It is a water-worn chasm, a quarter of a mile deep and twenty miles long, carved through sandstone and quartzite, about a mile wide at the top, and, including the summits of the flanking mountains, would embrace between 10,000 and 15,000 acres.

Linville Gorge would form a natural park—a park for the purpose of preserving for the use of the people and to the advantage of the State one of its chief scenic assets.

Origin of the "Petrified Forest"

THE "Petrified Forest" of Arizona, really a series of petrified forests, lies a short distance south of Adamana, on the line of the Santa Fe Railway. There are four "forests" included in a Government reservation called "Petrified Forest National Monument," created by Presidential proclamation in 1906. The name "forest" is not strictly appropriate, for the petrified tree trunks are all prostrate and are broken into sections. The logs are the remains of giant trees that grew in Triassic time, the age of reptiles, according to the United States Geological Survey, Department of the Interior. The trees were of several kinds, but most of them were related to the Norfolk Island pine, now used for indoor decoration. Doubtless they grew in a near-by region and, after falling, drifted down a watercourse and lodged in some eddy or sand bank. Later they were buried by sand and clay, finally to a depth of several thousand feet. Their conversion to stone was effected by gradual replacement of the woody material by silica in the form called chalcedony, deposited by underground water. A small amount of iron oxides deposited at the same time has given the brilliant and beautiful brown, yellow, and

red tints which appear in much of the material. The sand and clay in which these trees were buried was afterwards washed away. Some of the tree trunks are 6 feet in diameter and more than 100 feet in length. In the first forest there is a fine trunk that forms a natural bridge over a small ravine, the water having first washed away the overlying clay and sand, and

then, following a crevice, worked out the channel underneath. The length of this log is 110 feet, and the diameter 4 feet at the butt and 1½ feet at the top.

The petrified woods are beautiful objects for study. When thin slices are carefully ground down to a thickness of 0.003 inch or less and placed under the microscope they show perfectly the original wood structure, all the cells being distinct, though now they are replaced by chalcedony. By studying the sections,

—M. J. Riordan.

F. H. Knowlton, of the Geological Survey, has found that most of these araucarian trees were of the species *Araucarioxylon Arizonicum*, a tree now extinct. It is known to have lived at the same geologic time also in the east-central part of the United States, where the remains of some of its associates have been found.

The Petrified Forest

(At Chalcedony Park, Arizona)

These trees perchance from new-born earth upsprung
In sovereign grace what day the naked land
Was pristine clothed with verdure. By God's command
They shared decay, but for the charm that clung
Unto their leaves, unperishing were hung
About their trunks, amid three dunes of sand,
The immortality of stone, which grand
Estate they keep till knell of time be rung.

They died, but light and wind and wave, love-led,
Conspired to weave for them a shroud with gems
As rare as Balkis brought unto the king;
With agate, jasper, chrysoprase o'erspread,
And desert organs piping requiems,
No victory hath their grave, their death no sting.



GENERAL VIEW OF PETRIFIED FOREST. THIS PICTURE SHOWS THE LARGE NUMBER OF SPECIMENS IN THE FIELD. THE LOGS ARE ALL PRACTICALLY LODGED ON HIGH PLACES, SHOWING EVIDENCE OF THIS MATERIAL BEING AFLOAT WHEN THIS AREA WAS COVERED WITH WATER. THE REGION IS NOW ARID

The Friendly Wood Flame

By TOM WALLACE

Associate Editor, Louisville Courier-Journal

IN times past we have been wont to think of "King Coal" with feelings of pride and loyalty. During the present winter, however, many of us have awakened to the cold and bitter knowledge that "King Coal" can be the cruelest tyrant that ever blackened the pages of history. I am one of those who refuse to submit to the persecutions of "King Coal" in just so far as



CORDED WOOD READY FOR USE. IN MANY INSTANCES WOOD HAS BEEN FOUND SUPERIOR TO COAL FOR FUEL, BURNING EASILY AND FURNISHING A STEADY, EVEN HEAT AT A MINIMUM OF EXPENSE

I can help myself. I am ready to ally myself with any contender who stands for the welfare of the American public, and the contender which promises greatest relief to a large element of our population is my friend, the wood flame.

It is my conviction, as a result of personal experience, that every farm might produce its supply of fuel perpetually. Thus one-third of the population would be independent of the coal miners and coal-mine operators and of the effect of freight rates upon the cost of domestic fuel.

There is a widely prevalent impression that wood is an inferior fuel, and that it cannot be burned effectively in furnaces. My personal experience with wood for do-

mestic heating convinces me that there is no fuel which equals it for steady delivery of heat as a result of continuous combustion, and that the management of a furnace burning wood is in all respects simpler and more satisfactory than the management of a furnace burning hard or soft coal or crushed coke.

I first became acquainted with the possibilities of wood, where continuous heat is demanded, in the severe winter of 1917-18. Previously I had thought of wood as fuel which may be burned by persons who cannot buy coal and who are willing to content themselves with fuel which must be fed into stoves often, only to deliver fluctuating heat.

I was caught short of coal, at my farm residence, by a heavy snow which fell early in December. As an emergency measure, to avoid having to close the house, sheet-iron camp-stoves were installed. A woodpile which reflected the results of cleaning up a neglected woodland on the place, by hauling the dead and down timber out for safety from fires, was available. The snow did not melt till the middle of February. It was supplemented by several additional falls of snow, and the mercury was below zero almost every night or every night while the snow was on the ground. Hauling coal was impossible.

By burning logs as large as the stove doors would permit, the residence (a small, old-fashioned, log farmhouse, weather-boarded and plastered), was kept surprisingly comfortable. No water pipes were frozen at night, although plumbers were kept busy because of frozen pipes in every city in our latitudes.



ALL THE WOOD FOR THE FARMHOUSE WAS PERSONALLY SAWED AND SPLIT—WITH MORE FUN AND BENEFIT FROM THE EXERCISE AND IN LESS TIME THAN IS CONSUMED BY THE AVERAGE GOLFER IN PURSUIT OF THE ELUSIVE SPHERE

The camp-stoves replaced an anthracite hall stove and grate fires. It was found that the wood-burner, which supplanted the "base burner," in which at different times anthracite, crushed coke, and soft coal had been used, required less attention than the "base" burner, which cost eight times as much and required occasional relining at expense greater than the cost of a wood stove.

I personally chopped, sawed, and split, when splitting was necessary, every log burned in three camp-stoves and in the open wood fire which was burned for cheer in the evening. The chopping and sawing provided exercise requiring less time than a golf player consumes and it answered the question, often asked: Doesn't it require one man's time to prepare enough firewood to keep a farmhouse warm?

It doesn't.

When a pipeless furnace was installed in the farmhouse I regretted the prospect of giving up burning wood. The establishment which installed the furnace said it would burn "wood or anything," but did not recommend relying on wood in cold weather. Coal was burned the first winter.

Last winter I decided to try wood in the furnace during October, setting November 1 as the time at which to begin using coal. The coal was laid in early. By November I had learned that wood, at least in temperatures not lower than those of crisp autumn weather, was burned much more easily than coal, in a furnace designed for coal. Becoming interested in its possibilities in colder weather, and continuing personally to saw and chop the wood, I ran the furnace through the winter of 1921-2—a mild winter, yet one during which every farmer had an opportunity to fill his ice-house with four-inch ice.

Between October and mid-April the ashes were removed from the ash receptacle at the bottom of the furnace only five times, as against the necessary removal of coal ashes about twice a week. There were, of course, no clinkers, as against clinkers formed frequently when coal is burned, and requiring for removal considerable

vexing labor. The furnace did not go out for lack of proper draft, as coal furnaces do sometimes when the weather is mild. It did not go out at night once during the winter, after being "banked" with logs as large as the fire door permitted and short enough to fit easily in the firepot.

Cold nights two logs laid side by side and a third one on top never failed to burn till next morning, keeping the house fairly warm, about 60, with the draft entirely off. A few minutes of full draft before breakfast raised the temperature to 70.

As a rule, this furnace was banked at about 9 o'clock in the forenoon, less often an hour earlier. In mild weather it often was not necessary to give it any atten-

tion till night-fall. In colder weather wood was supplied in the early afternoon and again at night-fall. In mild spring weather — when operating a coal furnace sufficiently low to prevent overheating a residence and without its going out is difficult — one slightly seasoned black walnut log, cut green the previous summer, could be relied upon to burn steadily



A WOODPILE REFLECTING THE RESULTS OF CLEANING UP A NEGLECTED WOODLAND ON THE PLACE WHICH FURNISHED FUEL TO KEEP THE LOG FARMHOUSE COMFORTABLE IN AN EMERGENCY

for twelve hours without attention. In some instances it burned longer.

Varieties of wood used included well-seasoned locust, green apple wood, seasoned honey locust, green beech, green mulberry, green and seasoned cherry, and partly seasoned walnut. All wood used was from the farm, which has been a small farm for several generations. No wood was burned save dead and down timber or green wood from trees which for one reason or another were cut necessarily or trees blown down by storms.

Wood in the furnace was found in all respects preferable to coal. Perfectly green wood burned readily, steadily, and with the delivery of all of the heat desired. Well-seasoned locust burned somewhat more rapidly, producing great heat in proportion to the quantity of fuel.

A demonstrated advantage of wood as furnace fuel in farmhouses was the fact that if there is no man about



IF TEN PER CENT OF EVERY AMERICAN FARM WERE A WOODLOT—10 ACRES OUT OF EACH 100—GROUND BEING SELECTED FOR THE PURPOSE WHICH WAS NOT ARABLE, EVERY FARM WOULD PROVIDE ITS OWN FUEL CONTINUOUSLY

the house when fuel must be put in the furnace, a few light pieces of clean wood left for such use in emergencies may be fed into the furnace by a woman or a child, to whom shoveling coal into a furnace would be difficult and disagreeable.

Wood has not been burned regularly in the farm residence, but for a decade it has been burned regularly in a tenant-house on the farm, only dead and down or destroyed trees being used as fuel. The farm comprises only 87 acres and the farmhouse is more than 87 years old.

If 10 per cent of every American farm were a woodlot—ten acres of every 100—and the woodlot upon ground which would not be arable, every farm would provide its own fuel continuously. The labor of sawing wood is avoided easily by use of power saws. If fuel were grown as a crop customarily, neighborhood power saws would serve. It would not be necessary for each farmer to own a sawing outfit.

If every farm had a woodlot, perpetually maintained, the abundance of forest would perpetuate bird life, without which fruit-growing and agriculture must suffer greatly, relying upon artificial and uncertain methods of protection from insect pests.

Removal of the pressure of one-third of the demand for fuel for domestic consumption would affect the coal market favorably for consumers who still must buy coal. Every country home would have real woodland as a recreation ground. Wild flowers would be perpetuated, adding to the joys of country life for all normal persons. The burning of discarded fence-posts and superannuated fruit trees would be, of course, a feature of fuel and woodlot economy.

With public roads lined with trees, as they must be eventually in any civilized country, farm forests would be virtually connected by a continuous line of forest trees. Game conservation as well as conservation of insectivo-

rous birds would be aided. The advantages of the woodlot illustrated would induce farmers to forest unused lands in addition to the necessary woodlot for fuel. Eventually neighborhood timber supplies for building would be restored. The movable sawmill, a former neighborhood facility, would be revived. Freight cost on timber and lumber for farm construction would be eliminated, with benefit to farm consumers and possibly to other consumers.

Upon my small farm of 87 acres, use of wood in farmhouse and tenant-house this year saved, roughly, \$200, or more than one-third of the average net return upon the average farm of 100 acres under present conditions. If ten acres of woodland on each 100-acre farm would supply fuel continuously, would not the ten acres under trees be as regularly profitable as any ten acres on the farm?

Assuredly the farm woodlot and fuel grown as a crop deserve consideration in any scheme of practical farming. The fire chambers of coal furnaces are not well adapted to wood burning, but furnaces built especially for wood easily could be supplied if growing fuel were made regularly a feature of general farming.

BIG BUSINESS HELPS

The Remington Arms Union Metallic Cartridge Company, Bridgeport, Connecticut, is now following the plan of placing printed slips urging the prevention of forest fires in boxes of Remington loaded shotgun shells going out from the company's ammunition works. Since the company's annual production of shells runs into many millions it can be appreciated that the insert will have good circulation. The company changes the copy of these fire prevention inserts from time to time for variety. This is an example of good co-operation on the part of big business in the vital matter of prevention of forest fires.

"Advancing Forestry in America"

In the January number of *AMERICAN FORESTRY* there appeared an editorial entitled "Advancing Forestry in America." This editorial has elicited much comment, and, believing that the readers of the magazine will be interested in the tenor of this comment, the letters printed below are presented:

By ARTHUR CAPPER,
Senator from Kansas

I want to commend you upon the editorial "Advancing Forestry in America," which appeared in the January number of *AMERICAN FORESTRY*, and assure you that your suggestions have my hearty approval.

You have, indeed, taken a most rational position on the forestry situation as it exists today. Every real American is, or should be, vitally interested in a permanent national forestry program, and while all may not agree as to the means, we are all working for the same end. With our rate of lumber consumption greatly exceeding the marketable timber growth, we must adopt a constant program and adhere closely to it.

Secretary Wallace, in his annual report, has given five excellent suggestions for a beginning, and if, during the coming year, they can not only be adopted, but vigorously enforced, the solution to many of the forestry problems of our country will have been found. Much land in this country now standing idle and worth little or nothing for other purposes should be producing lumber; it is imperative that prompt steps be taken to put this land to use. Nor can we be unmindful of the need for precautionary measures in protecting the growing trees before they reach the logging stage.

I am deeply interested in this work, and will do everything I can to aid in the adoption of the program outlined by Secretary Wallace, as contained in the January editorial. I sincerely hope that by hard work and co-operation success may be achieved.

By BERTRAND H. SNELL,
Congressman from New York

I have read with much interest and pleasure your editorial in the January number of *AMERICAN FORESTRY* on the subject of "Advancing Forestry in America."

As you know, I have given considerable time and study to this proposition and I most cheerfully approve of your position on this question, and the clear and concise way you place it before your readers. Never in our history as a nation have the conditions been as propitious for mapping out a definite forestry program as at present. The main features of the future policy of this country toward our forests and their products, as outlined by a bill introduced by myself and before the Agricultural Committee of the House, are agreed to by all. The land-owner, the manufacturer, the consumer, the various State departments and Federal Government are nearer together today than ever before, and I trust we

can get this agreement into concrete form in the near future.

We all want to protect the forests we now have and provide for the future needs of our people within the confines of our own country. This can be done very easily if all the friends of conservation will work for the main features of a definite policy and forget the minor details that in the end will take care of themselves.

You are doing a good work and I congratulate you on it. Let it continue.

By JOHN W. BLODGETT,
President, National Lumber Manufacturers' Association

Your editorial on "Advancing Forestry in America," which appears in the January number of *AMERICAN FORESTRY*, suggests the only way in which constructive work toward the solution of the forestry problem can be made effective at the present time.

It has been demonstrated that Congress will not go any further along forestry lines than the plan so clearly outlined in your article, which quotes the recommendations made by Secretary Wallace in his annual report for 1922. These recommendations are concurred in by everybody who has studied the forestry question, and in the judgment of many of the leading foresters, if enacted into law and successfully applied in actual practice, will well-nigh solve the problem of providing a timber supply for future generations.

By RALPH S. HOSMER,
President, Society of American Foresters

In the editorial in the January issue of *AMERICAN FORESTRY*, entitled "Advancing Forestry in America," the plea is made that the five objectives outlined in the annual report of the Secretary of Agriculture for 1922 be made the forestry program for the coming year. With this suggestion it would seem that all who desire a rational expansion of our National Forest policy ought to be in hearty accord. Looked at from the practical standpoint of actually getting something done, the common sense of the proposed program makes a strong appeal.

Without exception, every one who has given any thought at all to the bringing of our forests under proper management knows that prevention of fire is the cornerstone of the whole structure. We have made rapid progress in the last decade, but in few parts of the country have we as yet achieved adequate protection. The benefits that result from Federal and State co-operation in

[Continued on Page 122]



The grading and sorting table at one of the fifteen Weyerhaeuser manufacturing units. Here the lumber is graded, regraded, checked, inspected and sorted by men with years of experience and training. Weyerhaeuser thoroughness makes for uniformity in grades.



This alley in the storage and drying yard of one of the Weyerhaeuser mills gives an idea of the immense quantities of lumber accumulated by this organization to take care of the needs of its customers. The higher grades are protected in storage sheds.

The Importance to Industry of Uniformity in Its Lumber Supply

THE industrial concern, hampered in one or more of its operations by a lack of uniformity in its lumber supply, will find it worth while to inquire into the service the Weyerhaeuser organization is rendering to a wide variety of industrials.

This service insures a constant supply of lumber, uniform in grade, car after car. The tenth or hundredth car is like the first. The first car in the type of wood and in the particular grade best fitted to meet the requirements of the buyer.

Such a service reduces operating costs in many ways. Production is not hampered through lack of the right kind of lumber. There is no unnecessary wastage of lumber. Handling costs are reduced.

In short, the user is able definitely to standardize lumber practices and factory operations.

THE Weyerhaeuser organization has for years studied industrial lumber needs. It has found that the best way to serve American Industry is to help a group of permanent customers find the wood best adapted to their requirements; and then to keep them supplied with the exact type of lumber in the correct grade, size and quantities they require.

Such a lumber service is made possible because of the timber resources, specialized

equipment and highly-trained personnel of the Weyerhaeuser organization:

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Fifteen complete modern manufacturing units.

Seasoning processes that prepare lumber scientifically for each exacting need.

A crew of men at all the plants, with years of experience in producing, grading and shipping Weyerhaeuser quality lumber.

A corps of salesmen trained to think as purchasing agents and buyers have wished for lumber sellers to think.

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EACH year more and more concerns are finding what this type of lumber service means in standardizing their lumber practices and factory operations.

The Weyerhaeuser Sales Company distributes Weyerhaeuser Forest Products through the established trade channels. Its principal office is in Spokane, Washington, with branch offices at 208 So. La Salle St., Chicago; 220 Broadway, New York; Lexington Bldg., Baltimore; and 4th and Robert Sts., St. Paul; and with representatives throughout the country.

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THE PASSING OF THE PINEY WOODS

By R. D. FORBES

An article appearing in the March, 1923, issue of American Forestry Magazine and setting forth in an intensely interesting way the sweeping changes which are taking place in our southern forests and their influence upon the social and industrial development of the South and upon the price America will pay for its lumber in the future.

This will be the third of a series of special articles which began in January, 1923, issue of the American Forestry Magazine.

Other articles of the series which will follow are:

April—"The Iron Horse of the West," by Bert P. Kirkland
 May—"The Blazed Trail of Forest Depletion," by Gifford Pinchot
 June—"The Long Haul from the Woods," by Earl H. Clapp
 July—"The Land Cry Against the Forest," by P. S. Lovejoy
 August—"The Farm and the Forest," by Henry S. Graves
 September—"Wild Followers of the Forest," by Aldo Leopold
 October—"The Forests of the World," by Raphael Zon
 November—"The Coming War for Wood," by Howard F. Weiss
 December—"Balancing the Forest Ledger," by William B. Greeley

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AMERICAN FORESTRY MAGAZINE,

Washington, D. C.

"Advancing Forestry in America"

[Continued from Page 120]

forest fire prevention are too obvious and too well known to need comment. From whatever angle one approaches this matter, he cannot fail to support this part of the program.

There may be well-founded differences of opinion as to how far public ownership of forests is desirable in the long run, but nearly every one agrees that the minimum limit is as yet far from having been reached. Therefore, whether it be the inclusion in National Forests of additional areas of non-agricultural and otherwise unproductive land by transfer from the remaining public domain in the West, or by the acquisition, through purchase, under the Weeks Law, of privately owned forest lands in the East, these items on the program are ones that command support. Personally, the writer is in favor of decided increases in all forms of publicly owned forests—National Forests, State Forests, community and town forests, together with catchment acres owned or controlled by quasi-public corporations like municipal water companies. Even small public forests, if rightly handled, are the best incentives to the practice of forestry by private owners in their neighborhood that can be devised. The time is ripe for

extending our National Forest area. By all means let this be one of the planks in the program for 1923.

One of the basic principles of forestry is to hold down the cost of all forestry operations. For this reason, wherever it is possible to do so, the forester works to regenerate the forest through natural reproduction. But there remain many areas where planting is essential if a forest of valuable kinds of trees is to be obtained. To facilitate forest planting thus becomes one of the duties of the State. There has been a wonderful advance in interest in forest planting in the Northeast in the past few years. Systematic and well-directed encouragement can easily make this a nation-wide movement. It is another item in the program that deserves unqualified support.

Under all sound programs of forest management, there must be the solid foundation of knowledge of the fundamental laws governing the growth and development of trees and of forests. Equally necessary is it that the business side of forestry, utilization and the marketing of forest products, rest securely on economic laws. Such a foundation can only be provided by careful, thorough, and painstaking research. Forestry is essen-

tially an applied science, but it requires that behind the practical application there shall be a great store of exact, scientific knowledge, such as can only be built up through research. America is in the process of developing methods of silviculture and of forest management that are adapted to the particular and individual needs of this continent. We can gain suggestion and inspiration from Europe, but we must develop our own systems of practice at home. And because forestry in the United States is still in the formative stage, we need now, perhaps more than at any other time, that provision be made whereby forest research can be undertaken and prosecuted in a truly adequate manner.

That the program proposed for this year covers but a part of the work that waits to be done before this nation is assured of adequate, continuous forest production is self-evident. But it is an admirable start toward that goal. Best of all, it is a program on which timber-land owners, large and small, operators, foresters, and the general public can all unite. There is a place in it where every one can take a part. Let every member of the American Forestry Association enter into it and help to give to our country a truly national forest policy.



C. V. MAUDLIN

ASSOCIATION'S NEW BUSINESS MANAGER

MR. C. V. MAUDLIN, formerly Chief of Operations at the U. S. Forest Products Laboratory at Madison, Wisconsin, has come to Washington to take charge of the circulation, advertising, and general business management of the American Forestry Association. Mr. Maudlin succeeds Mr. Herbert McCherry and was selected because of his outstanding achievement in business management and the development of business methods.

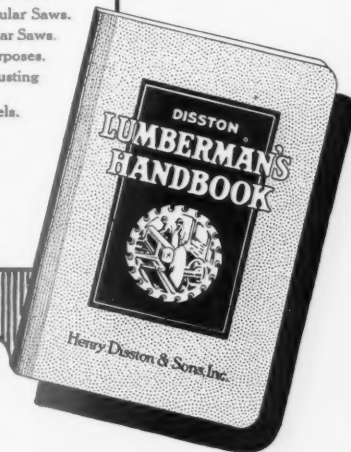
He graduated from Purdue University and, after spending a short time designing concrete structures, he entered the Forest Service. His interest in the development and organization phases of the work were very marked and he was soon placed in charge of the force engaged in testing timber. By systematic time studies he greatly increased the number of tests per person. In this position he put into effect many systems which reduced the amount of work required and at the same time gave increased production.

During the war Mr. Maudlin spent fourteen months with the U. S. Signal Corps as Senior Inspector in charge of airplane inspection in the Chicago District. He systematized the receiving and shipping of airplane parts in such a way that he received the commendation of the army officials supervising this feature of the work.

After the war he returned to the Forest Products Laboratory and developed and put into effect systems for recording the progress of work and for controlling expenditures. These systems have proved to be very satisfactory, and since the publication of an article regarding them, similar systems have been adopted by several large commercial organizations. Mr. Maudlin's past record of achievement promises well for the future development of the business of the American Forestry Association.

PARTIAL CONTENTS

General Information About Circular Saws.
Instructions for Setting and Sharpening Circular Saws.
Tools for Fitting Circular Saws.
Inserted Tooth Circular Saws.
Saws for Special Purposes.
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Our two-year apple have tops and roots that have grown two seasons in our nursery. The tops are headed 22 to 24 inches from the ground. A low-headed tree can be trained to a high-headed orchard tree, but you cannot make a low-headed orchard tree out of a high-headed nursery tree. Our one-year apple have roots that have grown two seasons and the tops one season in our nursery. The same is true with our peach, plum, cherry, and apricot. Our land, nearly 600 acres, is in the Ozarks over a thousand feet above sea-level. Our stock pleases particular people in every State. We also have pleased customers in Mexico, England, and other foreign countries.

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LONDON'S FAMOUS MULBERRIES

With reference to the falling late last summer of the famous old mulberry tree at Mildmay Hall, the Macon (Ga.) *Telegraph* gives the following interesting account of some of the famous trees of London town:

This tree, beneath which the Declaration of American Independence was read aloud in 1776—this tree, associated with the successful resistance of a nation to the tyranny of men, has at last been blown down. Brought over originally from Persia, in the sixteenth century, the mulberry has become a characteristic feature of London and the South of England. It readily strikes from a small shoot, and a branch buried deep in the ground will thrive and produce a fruit-bearing tree in a comparatively short space of time. The old mulberry at Mildmay Hall had been propped up by means of every possible device, yet the branches were full of fruit when it was blown down. Mulberries were always planted in the midst of a lawn, that the soft turf might prevent injury to the ripe fruit when it fell. Mulberry and apple pie was a choice luxury in historic times, and many allusions to this dish are to be found in old books.

Mildmay Hall attained notoriety in the reign of Charles I, when its owner, Sir Henry Mildmay, married the daughter of a city alderman. From thence onwards it has been associated with progressive movements, both social and religious, and has now passed into the ownership of the Young Men's Christian Association.

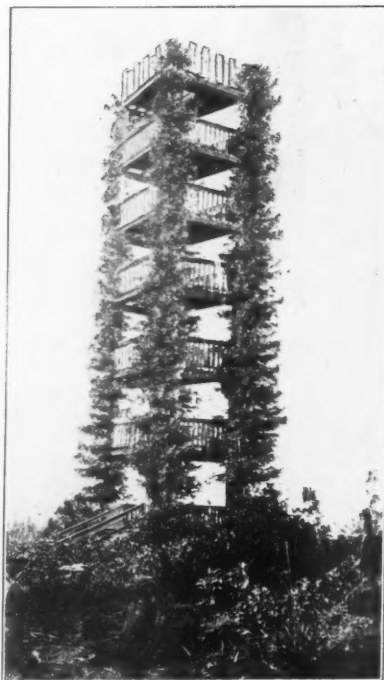
Yet another famous London mulberry tree stands in the grounds of Vane House, Greenhill, Hampstead, where Sir Henry Vane once lived, and where is still to be seen the old dining hall, with great baseless pillars down the center of the room, supporting what must have once been a fine ceiling. This mulberry tree is in fine preservation, and the effect of the sunlight through its dark green leaves, checkering the lawn, remains today as it must have been in the times when Vane and Cromwell were still friends and the cause of English liberty about to be put to the sword. It is curious that this link of the mulberry tree should exist between the English and American struggle for independence.

Yet another mulberry tree still stands in Chelsea, and is associated with Nell Gwyn, while another is to be found in the old precincts of the Charterhouse, that famous school which figures so frequently in Thackeray's writings, and which has trained so many famous men. The Charterhouse was originally a monastery, as its name implies, and was founded by Sir Walter de Marney in 1371, but upon the dissolution of the monasteries in the reign of Henry VIII, it was put up for sale. In 1611 it became the property of Sir Thomas Sutton, who established the well-known school. The mulberry stood in that por-

tion of the school which was associated with pensioners, the free scholars—and was sold with the old buildings to the Merchant Taylors School, when the Charterhouse, having outgrown its old premises, was transferred to Godalming in 1872.

Last, but not least of the London mulberries, may be mentioned one which has stood for centuries in Whitechapel, in a street down which Shakespeare is said to have passed when on his way to the Globe Theater.

"Again let me congratulate you upon AMERICAN FORESTRY. I love it, the cover is most artistic in color and design, and the illustrations, so well arranged, are very pleasing and altogether satisfactory. It should be read by every one and I never lose an opportunity to show it to my friends."—Mrs. W. F. Crummer.



A LIVING TREE TOWER

At Camp Meeker, a summer resort in Northern California stands a novel tower of four mast-like redwood trees that stand about 15 feet apart in a nearly perfect square. These trees have been joined by cross-beams upon which floors have been laid. There are seven floors to the tower and each floor is surrounded with a balustrade to prevent the danger of falling off. The trees have been topped off even with the balustrade of the top floor. The trees are about 100 feet high and have short, leafy branches from top to bottom, but they are not very thick. A novel sensation is experienced by those who are at the top of this tower on a windy day because of the swaying of the trees.—H. E. Zimmerman.

INFORMATION FOR MOUNTAIN TRAVELERS

A new map and recreation folder of the Columbia National Forest, located in Southern Washington, has been issued by the Forest Service. The map shows all the roads, trails and resorts on the forest and also as a special feature, shows in red the area of the old burns where care with fire is especially necessary, in particular, the Yacolt Burn of 1902 which covered 350 square miles. This area is now covered with young second growth, which if destroyed will have to be replaced by artificial planting at immense cost to the government.

As Mt. Adams, St. Helens, Spirit Lake and Government Mineral Springs are all within the Columbia National Forest, the folder will be of use to the large number of automobile campers and hikers who annually visit this region. Besides the map the folder contains eleven pictures of scenes of special beauty and interest, including the Wind River Forest Experiment Station and Nursery where about one million trees are grown each year for transplanting on denuded areas of Washington and Oregon. The Experiment station is well worth a visit. The tourist will find also a helpful list of rules for the prevention of fires, a suggested outfit for campers, and the hunting and fishing regulations of Skamania and Klickitat Counties which are partly within the forest boundaries.

The folder may be obtained from the District Forester, Post Office Building, Portland, Oregon, or from the Supervisor of the Columbia National Forest, Portland, Oregon.

TEST WESTERN WOOD

The Forest Products Laboratory of the Forest Service at Madison, Wisconsin, will make strength tests on Douglas fir structural timbers in co-operation with the West Coast Lumbermen's Association and the National Lumber Manufacturers' Association. The Douglas fir test material will be collected in the Columbia River, Coos Bay, Puget Sound and Grays Harbor regions. The collecting will be done by C. W. Zimmermann of the Forest Service Timber Testing Laboratory of Seattle; C. J. Hogue, manager of the West Coast Products Bureau, and D. F. Holtman, Construction Engineer of the National Lumber Manufacturers' Association.

District Forester Cecil stated that while the Forest Service has made over one-half million strength tests on the commercial woods of the United States, only meagre information is available on the strength of wooden columns. With the recent installation of a testing machine of a million pounds capacity, large wooden column tests are for the first time possible in the United States. A wooden column thirty feet in length is readily accommodated in the

capacious jaws of this huge machine and this giant of wood breakers will test the strength of horizontal beams and girders with a length of eighty feet.

The purpose of the study is to secure data on the strength of wooden columns and the effect of defects and drying on wood when used as a column. Such data is needed in the preparation of lumber grading rules and establishing of safe working stresses. Foresters believe that the tests will show that it is practicable to use smaller columns or lower grade material of the same size, which would mean a substantial saving of material.

Forest officers say that the timbers selected will be of both good and poor grades and will vary from light fast-growing to heavy slow-growing woods. Douglas fir, the principal commercial tree of Oregon and Washington, may be considered the most important of American woods. Though ranking second in point of production, it has a comparatively wide distribution, and the great variety of uses to which its wood can be put, places it first and as a structural timber it is unsurpassed.



(The Gilliams Service.)

NATURE FREAK, "THE CAMEL TREE"

This strange, grotesquely shaped tree grows in the Hartz Mountains of Germany and is supposed to be the star specimen of unnatural tree shapes. Residents call it the Camel Tree, and picnickers make use of its humps as convenient camp stools. It has been suggested that the shapes of Middle European pipes, with their bewildering twists and curves, are modeled after this tree.

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CAMPERS HEAD LIST OF FIRE CAUSES

Nearly six thousand forest fires were started on the National Forests of the country in the year 1921, is the statement of Chief Forester William B. Greeley in his annual report.

One-fourth of these fires were caused by lightning and one-third are directly attributable to the carelessness of campers. Brush-burners, lumbermen, incendiaries, and railroads are responsible for the bulk of the remaining fires.

Over 375,000 acres of National Forest land was burned over, with a total damage of more than \$200,000. The cost to the nation for fighting these fires amounted to \$532,811.

The 1922 fire season in Oregon and Washington has been the most severe in some years. The usual May and June rains failed, and fires set to clean up slash on private lands burned on into the danger period, with resulting great losses to property and growing timber.

Outside of the Pacific Northwest the season has so far been somewhat more favorable than 1921, with the exception of a late period of hot "fire weather" and unusual hazard in California. There have been comparatively few lightning fires, and this has meant absence of the "bunching" of fires, which has so often proved to be more than the protective force could handle.

The total number of man-caused fires rose from 2,996 to 4,400, and was only 4 per

cent less than in 1919, as against 35 per cent less in 1920. The marked increase in fires caused by campers, brush-burning, and incendiarism is disturbing. The Forest Service has made every effort possible with its available funds to reduce the number of these unnecessary man-caused fires through educational and law-enforcement work. There is urgent need for additional preventive work, without which the task of protection is in danger of becoming steadily more difficult and costly.

"PINES THAT COME BACK," NEW FARM FORESTRY FILM

Suggestions on forestry for the sandy-land farmer on the Southern Coastal Plain are embodied in "Pines that Come Back," a one-reel motion picture made for the Forest Service, with the co-operation of the Maryland State Board of Forestry, and recently released by the United States Department of Agriculture.

This picture concerns the problem of a farmer with a sandy field on which there is a stand of young pine. He has decided to clear it, but the State Forester tells him that the land will pay him better in pine than as plow land—and proves it. A personally conducted trip through neighboring forests that are proving profitable on lands worthless for field crops serves to convince the farmer that the Forester is right.

"Pines that Come Back" includes a comprehensive series of scenes illustrative of the growing, handling, and utilization of Loblolly

pine. While directly applicable to the eastern shores of Maryland and Virginia, it should be of value in a large area of the South, where soil conditions are similar to those found on the Eastern Shore.

WIDESPREAD INTEREST IN REDWOOD CAMPAIGN

Upon his return from the East, J. D. Grant, of San Francisco, Chairman of the Board of Directors of the Save the Redwoods League, reports that interest in the movement to save California's gigantic trees is steadily increasing among influential people and organizations.

While in New York, J. D. Grant conferred with Madison Grant, author of "The Passing of the Great Race," and one of the pioneers in the Save the Redwoods movement, regarding the plans for carrying on further work of the League.

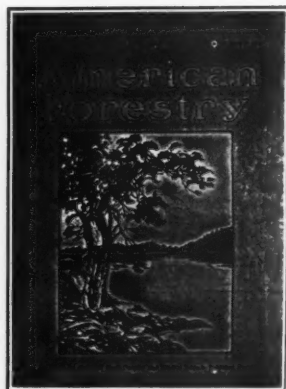
"There are indications of constantly increasing interest in the movement throughout the East," said Mr. Grant.

"Continued publicity is being given to our attempts to save the redwoods through metropolitan newspapers and magazines with large national circulation. We have secured the unanimous support of conservation societies throughout the nation, as well as the various automobile and tourist associations. People are awakening to a realization that California Redwoods, one of the marvels of the world, must be saved now or perish for all time."

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**CANADA TO HAVE IMPERIAL
FORESTRY CONFERENCE**

The Dominion Government has finally decided to hold the second Imperial Forestry Conference in Canada during the last week of July, writes Ellwood Wilson, and has voted the money for this purpose. The invitations to other countries in the Empire have been issued, and it is expected that about thirty or forty delegates from overseas will be present. It is probable that an organization meeting will be held in Ottawa, trips will then be taken to various points of interest to forests in the East. A week of conferences will then be held in Ottawa. A trip will then be taken to the West coast where the Conference will break up. If this Conference is as successful as the initial one held in London in 1920, it will be of the greatest benefit to the Empire in general and to Canada in particular.

A NEW CAMP FOR BOYS

A forestry camp for boys is to be opened on July 1, 1923, in the Lake region of Northern Wisconsin. It is to be called Camp Mishike (The Turtle) and will be located on the camp property of sixteen hundred acres on Mishike, Rock and Rainbow Lakes, in Vilas County, Wisconsin.

Dr. Hugh P. Baker, former Dean of the New York State College of Forestry at Syracuse University; Warren B. Bullock, former director of Extension in the same college, and W. E. Sanderson, for four years Director of the Summer Camp of the New York State College of Forestry, have associated themselves in an enterprise for the development of outdoor camps and schools. Under the supervision and direction of such well-known leaders in outdoor life, the success of the new camp is assured.

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"I am delighted with the presentation of Prof. Metcalf's article, 'Forestry Among the Giants,' in the November issue of AMERICAN FORESTRY."—*R. F. Hammatt.*

"The December number of AMERICAN FORESTRY is a wonder. Mr. Butler's article on Henry Ford's Forest is an eye-opener. The experience of the Lake States should be the object lesson of the Southeastern States."—*Bonnell H. Stone.*

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ATTENTION, FORESTERS!

AMERICAN FORESTRY will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters. This privilege is also extended to foresters, lumbermen, and woodsmen who want positions, or to persons having employment to offer such foresters, lumbermen, or woodsmen.

POSITIONS WANTED

GRADUATE FORESTER, at present employed by a Timber and Land Development Company, desires position as Forester or Superintendent on Private Estate, or in Park work. Experienced in Tree Planting and Pruning, the handling of Shrubbery, Fire Protection, and Logging operations. A willing worker, as well as equipped to direct others. Box 4060, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (9-11-22)

FORESTER, with ten years' experience as technical assistant and forest supervisor, now in charge of western National Forest, desires to make connection with commercial organization with opportunity of improving present position. Address Box 4065, care AMERICAN FORESTRY MAGAZINE, Washington, D. C.

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GRADUATE FORESTER, with 15 years' experience, at present employed by a Timber and Land Development Company, desires position on private estate or in park work. Experienced in tree planting and pruning, the handling of shrubbery and wild flowers, the opening of roads and trails, fire protection, and logging operations. A willing worker. Address Box 4080, AMERICAN FORESTRY MAGAZINE, Washington, D. C.

EXPERT TREE SURGEON, also some knowledge of Landscape, wishes position on private estate steady year around. Can handle men. At present employed by a Landscape and Forester Co. Can furnish best references. Address Box 4085, care AMERICAN FORESTRY, Washington, D. C.

YOUNG MAN, 21 years old, high school graduate, and at present employed as district school teacher, desires Forestry work with a lumber company or private estate for summer vacation and longer if work is satisfactory. The best of references. Box 4090, care AMERICAN FORESTRY, Washington, D. C. (2-4-23)

WANTED, to communicate with party interested in Forestry to act as financial partner in developing some large tract of cheap land, must have sufficient capital, would accept straight salary, large fruit or farm proposition considered. Have made this my life work and study, short course graduate, several years' experience, logging, road-making, pruning, manager 1,500 acre farm, orchard and forest combined. Address Box 4095, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (2-4-23)

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